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Sampling and Analysis of Minnesota Tributaries and Municipal Point Sources to Lake Superior

Minnesota Pollution Control Agency, Roseville

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Sampling and Analysis of Minnesota Tributaries and Municipal Point Sources to Lake Superior

By

State of Minnesota
Minnesota Pollution Control Agency
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SUMMARY

The State of Minnesota Pollution Control Agency entered into contract with the United States Environmental Protection Agency in July, 1973. The purpose of the project was to sample and analyze Minnesota Tributaries to Lake Superior to determine constituent loadings to satisfy the needs of the International Joint Commission (IJC). The project was extended from one to two years, and expanded to include municipal dischargers.

Interpretation of the resultant data base, and other information, led to the following conclusions:

1) The tributary streams to Lake Superior which are north of Duluth were found to be of superior water quality.

2) The St. Louis River is the most intensively used tributary in the Lake Superior Basin in Minnesota. It is also the most polluted. Generally, the St. Louis River loads for any single substance were far greater than any of the other Minnesota tributaries studied. Problems were noted with levels of Biochemical Oxygen Demand (BOD), suspended solids, phenols, fecal coliforms, copper, and dissolved oxygen.

3) The Nemadji, due to erodible nature of the red clay in its drainage basin, contributes large quantities of solids to the lake.

4) Basin-wide, iron, phenols, oil and fecal coliform levels most frequently exceed Minnesota water quality standards. To a lesser extent, copper, lead and manganese levels also exceed Minnesota water quality standards.

5) The treatment plants at Two Harbors, Silver Bay, Taconite Harbor and Grand Marais presently discharge directly to Lake Superior. These plants are in the final phases of upgrading to meet NPDES permit requirements. During the study period the effluent quality of these plants was poor.

6) Dischargers to the St. Louis River in the Cloquet and Duluth area will be connecting to the Western Lake Superior Sanitary District (WLSSD) facility not before the end of 1977. This should improve the water quality of the St. Louis River. Improvements in the river water quality may lag the start-up of the WLSSD plant by a considerable time because of the large quantities of organic sludge deposited in the river downstream of Cloquet.

INTRODUCTION

In July, 1973, the Minnesota Pollution Control Agency entered into contract with the United States Environmental Protection Agency for the purpose of sampling and analyzing 17 Minnesota tributaries to Lake Superior to determine constituent loadings (Table 1). This project was initiated to satisfy the needs of the International Joint Commission (IJC) Upper Lakes Reference Group. The contract, originally intended to run one year, was extended to two years to obtain more background data. Quarterly composite sampling of

municipal dischargers to the lake for 34 parameters (Table 2) was also undertaken the first year and was increased to include monthly grab samples for 20 parameters during the interim months beginning in January, 1974 (Table 2). During the course of the project, from July, 1973 to June, 1975, the selected streams were sampled 30 times for at least 35 parameters at least once monthly (Table 3). Sampling for extra parameters was also undertaken during the fall and spring low and high flow periods (Table 3). Resultant data was entered into the STORET system for summarization, evaluation and inclusion in this report. Flow data was obtained from United States Geological Survey (USGS) records where available, otherwise by means of cross-sections and flow measurements by the field crew.

Contract personnel consisted of two full-time Pollution Control Specialists, Mr. Ted Martin and Mrs. Kathy Svanda, who were responsible for the collection of the stream and effluent samples, stream gaging and flow measurements, data tabulation, input and final report preparation. Supervisory and technical assistance was provided by Mr. Craig Affeldt, Mr. Lanny Peissig and Mr. John McGuire, all of the Section of Surface and Groundwaters, Minnesota Pollution Control Agency. Sample analysis was conducted by the Minnesota Health Department, Section of Analytical Services.

Sample points were placed as close to the stream mouths as practicable to insure accurate total flows and representative samples. Ease of winter access and personnel safety were also important considerations due to the extreme topography and severe winters characteristic of this area. Fortunately, most streams were accessible via U.S. Highway 61, which runs the length of the North Shore, remaining extremely near the stream mouths along its length.

STUDY AREA

Minnesota's tributaries to Lake Superior, with a few exceptions, drain a predominantly wilderness, recreation orientated area virtually free of industry, agriculture, and large population concentrations. They flow into the largest (surface area), and one of the purest freshwater lakes in the world. Due to the long retention time of the lake (180 years), loadings assume great importance.

The project study area encompasses a 15,880 km^2 (6.098 mi^2) area in northeastern Minnesota's Lake Superior drainage basin. The northern limit of the study area is the Pigeon River. The Pigeon forms the United States-Canadian boundary for a short distance and lies on the Laurentian Divide which separates the Lake Superior from the Rainy River Basin. The southern limit of the area is the Nemadji River and the St. Croix Basin 32 km (20 miles) south of Duluth. The western boundary is adjacent to the Mississippi and Rainy River Basins. The Lake Superior drainage basin includes all of Minnesota's 302 km (189 miles) of Lake Superior shoreline. The basin may be divided into three sub-basins: 1) the Lake Superior sub-basin, which includes all North Shore streams 5,688 km^2 (2,184 mi^2), 2) St. Louis River sub-basin, the largest, 9,479 km^2 (3.640 mi^2) and 3) the Minnesota portion of the Nemadji River sub-basin, the smallest, 713 km^2 (274 mi^2).

Portions of seven Minnesota counties are included in the Lake Superior Basin: St. Louis, Lake, Cook, Carlton, Itasca, Pine and Aitkin. The sampled streams, 17 in number, represent 89% of the total drainage area.

Geology

The geology of the study area is very complex. The entire eastern "Arrowhead", or Minnesota's "North Shore" of Lake Superior was extensively glaciated and is mostly underlain by southeast dipping, igneous rock formations of precambrian age (Schwartz and Thiel, 1963). Dominant landforms are the result of glacial erosion rather than deposition. These formations are relatively erosion free (Schwartz and Thiel, 1963). The bedrock along the shore is predominately composed of exposed igneous and metamorphic varieties covered in spots by thin layers of glacial drift material (Schwartz and Thiel, 1963). Some of the formations approach 2.5 billion years in age, and are some of the oldest known on earth (Schwartz and Thiel, 1963). The St. Louis River sub-basin forms the major portion of the western Lake Superior Basin and consists of an extensive glacial lake plain. This area contains a majority of the rich Mesabi iron ore deposits. Sill plains and moraines comprise the mid-basin areas between the lake plain and rocky, ice-scoured coastline (Schwartz and Thiel, 1963).

Topography

The picturesque Minnesota coastline of Lake Superior rises abruptly from the lake, which is 183 m (602 ft.) above sea level and the lowest point in the state, to form a more or less continuous ridge just inland from the shore (FWPCA, 1969). Here, fast flowing streams descend rapidly to the lake from the forested hinterlands. Their rocky courses are replete with waterfalls, plunge pools and steeply-walled rock gorges, forming

a unique and beautiful setting. Eagle Mountain (elevation 701 m)(2,301 ft.) is the highest point in the state and is located in Cook County, 19 km (12 mi.) inland. An extensive portion of the basin is 183 m (600 ft.) or more above lake level (MPCA, 1971).

The Lake Superior Basin is extensively forested with conifers (90%), and comprises one of the nation's great wilderness areas. Extensively logged-over, second growth predominates now due to the absence of agriculture. Noted species include poplar, birch, spruce, fir, cedar, jack pine, red and white pine. Major soil types include sand and sandy loam to clay, and are the product of glacial debris and shallow lying bedrock (FWPCA, 1969). Most of the soils are acidic in nature. Only 6% of the basin is devoted to agriculture due to inherent poor soil quality, short growing season, and topography (Yeager and Borchert, 1968).

Climate

The basin's climate is continental on the interior and modified maritime on the coast. Temperature extremes have ranged from 41 to -44°C (106 to -47°F)(FWPCA, 1969).

The average annual precipitation over the basin is 68.6 - 81.3 cm (27 - 32 in.)(MPCA, 1971). Average annual snowfall varies from 101.6 - 127 cm (40 - 50 in.) with highs most often localized in the Duluth area. Snow cover days of 2.54 cm (1 in.) or more average 130 - 145 per year (MPCA, 1971). Although the North Shore receives a considerable amount of precipitation, the accumulations are much less than other areas on the Great Lakes. For instance, the Upper Michigan Peninsula and Buffalo,

New York each receive in excess of 254 cm (100 in.) snowfall alone per year due to their geographic positions on the Great Lakes. Buffalo lies at the eastern end of Lake Erie and feels the effect of moisture drawn from the lakes by east-bound weather systems. The Upper Michigan Peninsula experiences the same effect from Lake Superior.

The average date of the last spring freeze varies from May 17 to June 6 (earlier along the lakeshore); the average date of the first fall freeze is from September 6 to September 26 (later along the lakeshore (MPCA, 1971).

Population

Most of the 237, 848 people in the Lake Superior Basin reside in the Duluth Regional area, which includes Proctor and Cloquet, Minnesota, and the Mesabi Iron Range, which extends from Hibbing to Hoyt Lakes (see Figure 1). The remaining 15,500 people live in small communities that hug the shoreline or are established at scattered inland points (MPCA, 1971).

SAMPLING AND ANALYTICAL TECHNIQUES

Samples were collected utilizing a double sampler when possible. Otherwise, due to shallow nature of North Shore streams, samples were collected directly in the sample bottles. Field analysis for temperature, and for dissolved oxygen, using the Alsterberg-Azide modification of the Winkler method, preceded packing, icing and shipment of the samples back to the Minnesota Department of Health, Analytical Services Section. The samples were returned to the lab within 24 hours for analysis.

Those samples requiring special preservation (i.e. phenol and cyanide) were stored in bottles prepared according to Standard Methods for Examination of Water and Wastewater, APHA, AWWA, WPCF, Edition #13, 1971. Samples were analyzed utilizing the techniques listed in Table 4.

Treatment plant effluent composite samples were obtained using SERCO 24-hour samplers. In most cases, the samples were composited proportionally according to plant flows. Otherwise, equal portions were substituted when flow meters were inoperable due to plant construction and there was no feasible spot to construct a weir.

HYDROLOGY*

Stream Descriptions

Most of the Lake Superior Basin tributaries studied flow southeastward and average about twenty miles in length. Two exceptions are the Nemadji, which takes a northeasterly course entering Lake Superior at Superior, Wisconsin, and the Pigeon, which flows eastward along the U.S.-Canadian border and into the lake. Based on drainage basin characteristics, the target streams may be classified into different groups according to geological and physiographic characteristics.

The Nemadji River falls into a separate category. It is characterized by elevated peak flows and shows quick response to low or high precipitation. The stream has several large tributaries and a deeply incised

* Most of the information in this section was obtained from the Minnesota Department of Conservation Bulletin #24, 1966, except where otherwise indicated. However, drainage areas are based on Watershed Inventory Maps, U.S. Department of Agriculture, Soil Conservation Service.

drainage pattern with some agriculture on the ridgetops. Its total drainage area is 713 km^2 (274 mi^2) in eastern Carlton and northwestern Pine Counties in Minnesota, and 450 km^2 (173 mi^2) in Wisconsin. A total of 55% of the drainage area in Minnesota is upstream of the sampling point. The main stem is about 88 km (55 mi.) long. Total fall of the river is 137 m (450 ft.). Much of the Nemadji River area is composed of Pleistocene-aged red clay which is subject to severe erosion (Schwartz and Thiel, 1963).

A large grouping includes all North Shore streams south of Taconite Harbor. These streams are characterized by high peak and low minimum flows. They show quick response to periods of high and low precipitation and have relatively few large open water areas in their respective basins. Less than 5% of the total drainage area is tied up in lakes and swamps. The individual stream basins are generally elongated, and the main stems have short tributaries. The following streams may be included in this group:

Baptism - total drainage area 367 km^2 (141 mi^2). Length is 35 km (22 mi.) from west branch to mouth. Stream gradient about 10.62 m/km (55 ft/mile). The river falls 223 m (733 ft.) in last 14.5 km (9 miles). A total of 100% of the drainage area is upstream of the sampling point.

The USGS maintains a streamflow gaging station near the mouth. The 46-year average discharge at this point is 4.758 m^3/sec. (168 ft^3/sec.). Maximum recorded discharge is 265 m^3/sec. (9,350 ft^3/sec.). The minimum discharge is 0.011 m^3/sec. (0.4 ft^3/sec.).

Manitou - total drainage area 258 km^2 (99 mi^2). Length 29 km (18 miles) with a stream gradient of 15 m/km (80 ft/mile). Eight major waterfalls in lower reaches with 6-21 m (20 - 70 ft.) drops. About 31 km^2 (12 mi^2) of headwaters area composed of lakes and swamps. A total of 98% of the drainage area is upstream of the sampling point.

Beaver - Drainage area 325 km^2 (125 mi^2). Length 37 km (21 miles) with a

gradient of 9.38 m/km (50 ft/mile). River falls about 91 m (300 ft.) in lower 24 km (15 miles). A total of 60% of the drainage area is upstream of the sampling point.

Split Rock - total drainage area 109 km^2 (42 mi^2), length 24 km (15 miles). Stream gradient nearly 13.2 m/km (70 ft/mile). All of the drainage area is upstream of the sampling point.

Gooseberry - total drainage area 203 km^2 (78 mi^2) with a 32 km (20 mile) main stem. Stream gradient about 10.62 m/km (55 ft/mile) with 30 m (100 ft.) falls near the mouth at Gooseberry Falls State Park. High seepage losses into fractured lava flows near the mouth. All of the drainage area is upstream of the sampling point.

Knife - total drainage area 234 km^2 (90 mi^2). Length 30 km (19 miles) with a gradient of about 7.5 m/km (40 ft/mile). All of the drainage area is upstream of the sampling point.

Sucker - total drainage area 112 km^2 (43 mi^2). Length 24 km (15 miles) with a gradient of about 11.25 m/km (60 ft/mile). All of the drainage area is upstream of the sampling point.

French - total drainage area 59 km^2 (22 mi^2). Length 19 km (12 miles) with a gradient of about 9.38 m/km (50 ft/mile). All of the drainage area is upstream of the sampling point.

Lester - total drainage area 140 km^2 (54 mi^2). Length 24 km (15 miles) with a gradient of about 9.38 m/km (50 ft/mile). Greatest fall in lower 9.7 km (6 miles). High seepage losses into fractured lava along lower reaches of stream. All of the drainage area is upstream of the sampling point.

The Cascade, Temperance and Cross Rivers are similar in most respects to the above, but differ in that their flows are regulated somewhat by the lakes and swamps in their headwater areas. About 5% of the drainage basin area consists of open water areas.

Cascade - total drainage area 317 km^2 (122 mi^2). Length 24 km (15 miles) with a gradient of about 16.88 m/km (90 ft/mile). Drops 274 m (900 ft.) in lower 4.8 km (3 miles). Peak flows are of less magnitude than other streams in this group. A total of 98% of the drainage area is upstream of the sampling point.

Temperance - total drainage area 448 km^2 (172 mi^2). Length 38.7 km (24 miles) with a gradient of about 9.38 m/km (50 ft/mile). Fall is 73 m (240 ft.) in last 2 km (1¼ mi.). A total of 99% of the drainage area is above the sampling point.

Cross - total drainage area 224 km^2 (86 mi^2). Length 30 km (19 miles) with a gradient of about 11.25 m/km (60 ft/mile). Greatest fall in lower reaches. There are five waterfalls 3.6 - 27 m (12-90 ft.) high in this section. All of the drainage area is above the sampling point.

The Poplar River is grouped by itself and is characterized by high peak and low minimum flows. Some natural regulatiosn through lakes. Open water lake and swamp areas comprise 5-10% of the basin. The basin is wider than it is long with a rectangular drainage system that adjusts to bedrock fractures and joints. Its total drainage area is 409 km^2 (157 mi^2) and it has a main stem 32 km (20 mi) long. A total of 87% of the drainage area is above the sampling point.

The Pigeon and Brule Rivers are characterized by moderately high peak flows and well sustained low flows. Their drainage basins contain many flow-regulating, interconnected, rock basin lakes. Most high flows are derived from snowmelt, consequently, the magnitude of peak flows is proportionally less than adjacent streams with smaller drainage areas.

Pigeon River - total drainage area is 593 km^2 (228 mi^2) on the U.S. side. The total for Minnesota-Ontario is 1,562 km^2 (600 mi^2). The main stem from Mountain Lake to the mouth is 79 km (49 mi) long. Total fall is 213 m (700 ft) in lower 30.6 km (19 miles). Lakes and swamps comprise 15% of the watershed.

The 50-year (1923-73) average discharge for the Pigeon River at the Middle Falls USGS gage near Pigeon River, Minnesota, is 14.2 m^2/sec. (502 ft^2/sec.).

The discharge ranged from 312 m^3/sec. (11,000 ft^3/sec.) to .76 m^3/sec. (27 ft^3/sec.). All of the Minnesota drainage area is above the sampling point.

Brule - total drainage area 617 km^2 (237 mi^2). The main stem is 63 km (39 mi.) long flowing through Brule, Greenwood and Winchell Lakes. The river falls about 244 m (800 ft.) in its lower 13 km (8 mi.). All of drainage area is above the sampling point.

The St. Louis River is the largest and most intensively used tributary in the Lake Superior Basin. Station SLB-1 represents the entire St. Louis River and St. Louis Bay drainage area which is 9,479 km^2 (3,640 m^2). Originating in Seven Beaver Lake in eastern St. Louis County, the St. Louis winds westward through the Mesabi Iron Range and then south and east to Lake Superior 263 km (163 mi) distance. The total fall is 325 m (1,065 ft). The lower St. Louis River, a 53 km (33 mi.) stretch from Cloquet, Minnesota, to the mouth at Lake Superior contains most of the riparian population concentrations and dischargers. Due to favorable topography in the form of a steep gradient, 122 m in 22.6 km (400 ft/14 miles), and narrow gorge, the lower river supports five hydroelectric installations. The Thompson plant, which is the largest in the state, most directly affects the lower river. Sharp fluctuations in river flows occur here because of hydroelectric diversions. Major tributaries to the St. Louis include the Cloquet, Midway, Swan, Partridge and Two Rivers. Average discharge over a 60-year period based on the USGS Scanlon, Minnesota, gage records is 64.3 m^3/sec. (2,272 ft^3/sec.). The discharge ranged from 1,073 m^3/sec. (37,900 ft^3/sec.) to 2.27 m^3/sec. (80 ft^3/sec.).

Stream Flows

Stream flows throughout the basin are primarily controlled by surface runoff. During low precipitation periods, flows are maintained by ground water and by the slow release of water stored in lakes and marshy areas.

During low flows the Baptism and similar streams are maintained by ground water stores because they have minimal surface water storage capacity in the form of lakes and swamps. Ground water discharged to basin streams amounts to approximately 5 cm (2 in.) annually.

This is a fast-runoff area because of the limited surface storage capacity. These streams have higher average annual runoff rates than do those streams with well sustained flows. The Pigeon, Brule and Poplar River flows are maintained, during low precipitation periods, by surface water stores. Mean annual runoff is reduced, however, because of evapotranspiration losses from these areas (Minnesota Department of Conservation, 1966).

Flooding is not a serious problem on the tributaries because steep gradients tend to speed flows while keeping stream levels down. The lack of shoreline development also lessens high water damage.

Flow data for the tributary streams was obtained via several different methods. The St. Louis, Pigeon and Baptism Rivers had established United States Geological Survey (USGS) stream gaging stations located at points suitable for the project. The Poplar River was also gaged, but records were kept only intermittently. During 1974 USGS streams gaging stations and rating curves were established on and for the Nemadji and Knife Rivers. The remaining eleven streams were cross-sectioned six times by the field crew to develop rating curves that consequently provided a means for obtaining stream flow estimates. Flow measurement by the field crew involved determining cross-sectional segmental areas of the stream in increments of less than 10% of the stream width at the cross-section point. These segmental

areas were then multiplied by their respective average velocities. Total discharge in cubic meters per second (cms) was determined by adding the products of the segmental areas and velocities. The field crew used a (Gurley Model 665) direct readout current meter to determine velocities. A calibrated wading rod and bucket wheel assembly was employed where stream depths permitted wading measurements. Otherwise, a long cable and weighted bucket wheel assembly was employed off highway bridges or overpasses. Gage heights were noted on the interim sampling trips and subsequently applied to the rating curves.

MUNICIPAL-INDUSTRIAL DISCHARGERS

The Lake Superior Basin is receiving much assistance in the form of state and federal funds for sewage treatment plant construction. A minimum of secondary treatment is required for all municipal sewage plants. The plants must provide best practicable control technology not later than July 1, 1977. In addition, all waste treatment plants discharging to Lake Superior must comply with State of Minnesota Regulation WPC-15 and 26.

The treatment plants discharging directly to Lake Superior are subject to the following effluent standards:*

Substance or Characteristic	Limit or Range
Five Day Biochemical Oxygen Demand (BOD)	25 mg/l
Total Suspended Solids	30 mg/l

* Direct municipal dischargers were under construction for most of the study period and there were no interim effluent standards issued. The above standards are final.

Substance or Characteristic (cont.)	Limit or Range
Fecal Coliform Group Organisms	10 MPN/100 ml
pH	6.5 - 8.5
Turbidity	5 JCU
Phosphorus	1.0 mg/l
Oil	Essentially free of visible oil
Unspecified toxic or corrosive substances	None at levels acutely toxic to humans or other animals or plant life, or directly damaging to real property

The following sewage treatment plants discharge directly to Lake Superior:

Two Harbors (pop. 4,437) recently upgraded its treatment plant to the tertiary level by constructing an activated sludge facility complete with chemical treatment, chlorination facilities, dual-media filters and sludge digestion. Daily average discharge to Lake Superior is 9.5 megaliters/day (2.5 MGD).

Silver Bay (pop. 3,504) has added grit removal and chemical treatment to their existing trickling filter process to provide tertiary level treatment. The plant disposes of 3 megaliters/day (0.8 MGD) treated effluent to Lake Superior.

Grand Marais (pop. 1,301) has also added tertiary treatment by upgrading to complete mix activated sludge with chlorination and chemical treatment. The plant disposes 1.1 megaliters/day (0.3 MGD) of treated effluent to Lake Superior.

Taconite Harbor (population 91) utilizes a small secondary plant that treats the waste of twenty homes. The facility is owned and operated by Erie Mining Company. It is to be replaced by a soil absorption field in the near future. It presently discharges .239 megaliters/day (.063 MGD) effluent to Lake Superior.

Duluth's main plant and three satellite plants discharge to the St. Louis River upstream of the St. Louis Bay station (SLB-1) and downstream of the Oliver Bridge site (SL-4). These discharges will be incorporated into the Western Lake Superior Sanitary District (WLSSD).

The complex will serve a connected population of 150,000 people with an anticipated increase to 175,000 by 1990. The new secondary plant will treat Duluth's main and three satellite plant wastes as well as that of the following municipal and industrial treatment plants presently discharging to the St. Louis River:

Conwed Corporation (Cloquet)
Carlton STP
Wrenshall STP
Scanlon STP
Potlatch Industries
(Northwest Paper-Cloquet)
Cloquet STP
Continental Oil
Nopeming Sanitorium STP
Jay Cook STP

Reference figure 2 for location of dischargers. U.S. Steel does not plan to go into the WLSSD.

WLSSD treatment will consist of a grit chamber, activated sludge secondary settling, chemical addition with contact clarification, multimedia filtration, and chlorinization. This plant is not slated for completion before the end of 1977.

The plant effluent will be discharged to St. Louis Bay and will be subject to the following limitations:

Substance or Characteristic	Limit or Range
Biochemical oxygen demand$_5$	25 mg/l
Total suspended solids	30 mg/l
Fecal coliform group organisms	200 MPN/100 ml
pH Range	6.5 - 8.5
Turbidity	25 JCU
Phosphorus	1 mg/l

TRIBUTARY CLASSIFICATIONS AND APPLICABLE STANDARDS

Minnesota Pollution Control Agency Regulations WPC-14 and 15 include the criteria for the classification of the intrastate and interstate waters of the state, respectively, and the establishment of standards of water quality and purity. Interstate waters are those waters that flow across or form part of the state boundary. Intrastate waters include all waters not defined as interstate. WPC-24 and 25 contain the classifications of the intra and interstate waters of Minnesota, respectively. Additional standards of water quality for the Nemadji River are specified in WPC-17. The following regulations and classification apply to the tributary streams:

Tributary Stream	Governing WPC	Intra-Interstate	Reach Involved	Classification*
Nemadji	15, 17, 25	Inter	Source to Wisconsin border	1B, 2A
Pigeon	15, 25	Inter	South Fowl Lake to Pigeon Bay	1B, 2B, 3A

*Waters are also classified 3C, 4A, 4B, 5 & 6

Tributary Stream	Governing WPC	Intra-Interstate	Reach Involved	Classification*
St. Louis	15, 25	Inter	Seven Beaver Lake Outlet to Cloquet	2B, 3B
St. Louis	15, 25	Inter	Cloquet to Clough Island	2C, 3B
St. Louis	15, 25	Inter	St. Louis Bay Superior Bay	2B, 3B
Lester	14, 24	Intra		1B, 2A, 3B
French	14, 24	Intra		1B, 2A, 3B
Sucker	14, 24	Intra		1B, 2A, 3B
Knife	14, 24	Intra		1B, 2A, 3B
Gooseberry	14, 24	Intra		1B, 2A, 3B
Split Rock	14, 24	Intra		1B, 2A, 3B
Beaver	14, 24	Intra		1B, 2A, 3B
Baptism	14, 24	Intra		1B, 2A, 3B
Manitou	14, 24	Intra		1B, 2A, 3B
Cross	14, 24	Intra		1B, 2A, 3B
Temperance	14, 24	Intra		1B, 2A, 3B
Poplar	14, 24	Intra		1B, 2A, 3B
Cascad	14, 24	Intra		1B, 2A, 3B
Brule	14, 24	Intra		1B, 2A, 3B

*Waters are also classified 3C, 4A, 4B, 5 & 6

The following water quality standards apply to the classifications:

(1) Domestic Consumption

Class A The quality of this class of the waters of the state shall be such that without treatment of any kind the raw waters will meet in all respects both the mandatory and recommended requirements of the Public Health Service Drinking Water Standards-1962 for drinking water as specified in Publication No. 956 published by the Public Health Service of the U.S. Department of Health, Education and Welfare, and any revisions, amendments or supplements thereto. This standard will ordinarily be restricted to underground waters with a high degree of natural protection. The basic requirements are given below:

Substance or Characteristic	Limit or Range
Total coliform organisms	1 most probable number per 100 milliliters
Turbidity value	5
Color Value	15
Threshold odor number	3
Methylene blue active substance (MBAS)	0.5 milligram per liter
Arsenic (As)	0.01 milligram per liter
Chlorides (Cl)	250 milligrams per liter
Copper (Cu)	1 milligram per liter
Carbon Chloroform extract	0.2 milligram per liter
Cyanides (CN)	0.01 milligram per liter
Fluorides (F)	1.5 milligrams per liter
Iron (Fe)	0.3 milligram per liter
Manganese (Mn)	0.05 milligram per liter
Nitrates (NO_3)	45 milligrams per liter
Phenol	0.001 milligram per liter
Sulfates (SO_4)	250 milligrams per liter
Total dissolved solids	500 milligrams per liter
Zinc (Zn)	5 milligrams per liter
Barium (Ba)	1 milligram per liter
Cadmium (Cd)	0.01 milligram per liter
Chromium (hexavalent, Cr)	0.05 milligram per liter
Lead (Pb)	0.05 milligram per liter
Selenium (Se)	0.01 milligram per liter

Substance or Characteristic	Limit or Range
Silver (Ag)	0.05 milligram per liter
Radioactive material	Not to exceed the lowest concentrations permitted to an uncontrolled environment as prescribed by the appropriate authority having control over their use.

Class B The quality of this class of the waters of the state shall be such that with approved disinfection, such as simple chlorination or its equivalent, the treated water will meet in all respects both the mandatory and recommended requirements of the Public Health Service Drinking Water Standards-1962 for drinking water as specified in Publication 956 published by the Public Health Service of the U.S. Department of Health, Education and Welfare, and any revisions, amendments or supplements thereto. This standard will ordinarily be restricted to surface and underground waters with a moderately high degree of natural protection. The physical and chemical standards quoted above for Class A state waters shall also apply to these waters in the untreated state, except as listed below:

Substance or Characteristic	Limit or Range
Fecal coliform organisms	10 most probable number per 100 milliliters

Class C The quality of this class of the waters of the state shall be such that with treatment consisting of coagulation, sedimentation, filtration, storage and chlorination or other equivalent treatment processes, the treated water will meet in all respects both the mandatory and recommended requirements of the Public Health Service

Drinking Water Standards-1962 for drinking water as specified in Publication No. 956 published by the Public Health Service of the U.S. Department of Health, Education and Welfare, and any revisions, amendments or supplements thereto. This standard will ordinarily be restricted to surface waters, and ground waters in aquifers not considered to afford adequate protection against contamination from surface or other sources of pollution. Such aquifers normally would include fractured and channeled limestone, unprotected impervious hard rock where the state water is obtained from mechanical fractures, joints, etc., with surface connections and coarse gravels subjected to surface water infiltration. The physical and chemical standards quoted above for Class A waters shall also apply to these waters in the untreated state, except as listed below:

Substance or Characteristic	Limit or Range
Fecal coliform organisms	200 most probable number per 100 milliliters
Turbidity value	25

Class D The quality of this class of the waters of the state shall be such that after treatment consisting of coagulation, sedimentation, filtration, storage and chlorination, plus additional pre, post, or intermediate stages of treatment, or other equivalent treatment processes, the treated water will meet in all respects the recommended requirements of the Public Health Service Drinking Water Standards-1962 for drinking water as specified in Publication No. 956 published by the Public Health Service of the U.S. Department of Health, Education and Welfare, and any revisions, amendments or

supplements thereto. This standard will ordinarily be restricted to surface waters, and ground waters in aquifers not considered to afford adequate protection against contamination from surface or other sources of pollution. Such aquifers normally would include fractured and channeled limestone, unprotected impervious hard rock where water is obtained from mechanical fractures, joints, etc., with surface connections, and coarse gravels subjected to surface water infiltration. The concentrations or ranges given below shall not be exceeded in the raw waters before treatment:

Substance or Characteristic	Limit or Range
Fecal coliform organisms	200 most probable number per 100 milliliters
Arsenic (As)	0.05 milligram per liter
Barium (Ba)	1 milligram per liter
Cadmium (Cd)	0.01 milligram per liter
Chromium (Cr + 6)	0.05 milligram per liter
Cyanide (CN)	0.2 milligram per liter
Fluoride (F)	1.5 milligrams per liter
Lead (Pb)	0.05 milligram per liter
Selenium (Se)	0.01 milligram per liter
Silver (Ag)	0.05 milligram per liter
Radioactive Material	Not to exceed the lowest concentrations permitted to be discharged to an uncontrolled environment as prescribed by the appropriate authority having control over their use.

In addition to the above listed standards, no sewage, industrial waste or other wastes, treated or untreated, shall be discharged into or permitted by any person to gain access to any state waters classified for domestic consumption so as to cause any material undesirable increase in the taste, hardness, temperature, toxicity, corrosivenesss

or nutrient content or in any other manner to impair the natural quality or value of the state waters for use as a source of drinking water.

(2) Fisheries and Recreation

Class A The quality of this class of the waters of the state shall be such as to permit the propagation and maintenance of warm or cold water sport or commercial fishes and be suitable for aquatic recreation of all kinds, including bathing, for which the waters may be usable. Limiting concentrations or ranges of substances or characteristics which should not be exceeded in the state waters are given below:

Substance or Characteristic	Limit or Range
Dissolved oxygen	Not less than 7 milligrams per liter from October 1st and continuing through May 31st, and Not less than 6 milligrams per liter at other times
Temperature	No material increase
Ammonia (N)	0.2 milligram per liter
Chlorides (Cl)	50 milligrams per liter
Chromium (Cr)	0.02 milligram per liter
Copper (Cu)	0.01 milligram per liter or not greater than 1/10 the 96 hour TLM value
Cyanides (CN)	0.02 milligram per liter
Oil	0.5 milligram per liter
pH value	6.5 - 8.5
Phenols	0.01 milligram per liter and none that could impart odor or taste to fish flesh or other fresh-water edible products such as crayfish, clams, prawns and like creatures. Where it seems probable that a discharge

	may result in tainting of edible aquatic products, bio-assays and taste panels will be required to determine whether tainting is likely or present.
Turbidity value	10
Color value	30
Fecal coliform organisms	200 most probable number per 100 milliliters as a monthly geometric mean based on not less than 5 samples per month, nor exceed 400 most probable number per 100 milliliters in more than 10% of all samples during any month.
Radioactive materials	Not to exceed the lowest concentrations permitted to be discharged to an uncontrolled environment as prescribed by the appropriate authority having control over their use.

Class B The quality of this class of the waters of the state shall be such as to permit the propagation and maintenance of cool or warm water sport or commercial fishes and be suitable for aquatic recreation of all kinds, including bathing, for which the waters may be usable. Limiting concentrations or ranges of substances or characteristics which should not be exceeded in the state waters are given below:

Substance or Characteristic	Limit or Range
Dissolved oxygen	Not less than 6 milligrams per liter from April 1 through May 31, and Not less than 5 milligrams per liter at other times.
Temperature	5 F^{o} above natural in streams and 3 ^{o}F above natural in lakes, based on monthly

	average of the maximum daily temperature, except in no case shall it exceed the daily average temperature of 86°F.
Ammonia (N)	1 milligram per liter
Chromium (Cr)	0.05 milligram per liter
Copper (Cu)	0.01 milligram per liter or not greater than 1/10 the 96 hour TLM value.
Cyanides (CN)	0.02 milligram per liter
Oil	0.5 milligram per liter
pH value	6.5 - 9.0
Phenols	0.01 milligram per liter and none that could impart odor or taste to fish flesh or other freshwater edible products such as crayfish, clams, prawns and like creatures. Where it seems probable that a discharge may result in tainting of edible aquatic products, bioassays and taste panels will be required to determine whether tainting is likely or present.
Turbidity value	25
Fecal coliform organisms	200 most probable number per 100 milliliters as a monthly geometric mean based on not less than 5 samples per month, nor equal or exceed 2000 most probable number per 100 milliliters in more than 10% of all samples during any month.
Radioactive materials	Not to exceed the lowest concentration permitted to be discharged to an uncontrolled environment as prescribed by the appropriate authority having control over their use.

Class C The quality of this class of the waters of the state shall be such as to permit the propagation and maintenance of rough fish or species commonly inhabiting waters of the vicinity under natural conditions,

and be suitable for boating and other forms of aquatic recreation for which the state waters may be usable. Limiting concentrations or ranges of substances or characteristics which should not be exceeded in the state waters are given below:

Substance or Characteristic	Limit or Range
Dissolved oxygen	Not less than 5 milligrams per liter from April 1 through November 30, and not less than 4 milligrams per liter at other times.
Temperature	5° above natural in streams and 3° above natural in lakes, based on monthly average of the maximum daily temperature except in no case shall it exceed the daily average temperature of 90°F.
Ammonia (N)	1.5 milligrams per liter
Chromium (Cr)	0.05 milligram per liter
Copper (Cu)	0.01 milligram per liter or not greater than 1/10 the 96 hour TLM value.
Cyanides (CN)	0.02 milligram per liter
Oil	10 milligrams per liter, and none in such quantities as to (1) produce a visible color film on the surface, (2) impart an oil odor to water or an oil taste to fish and edible invertebrates, (3) coat the banks and bottom of the watercourse or taint any of the associated biota, or (4) become effective toxicants according to the criteria recommended.
pH value	6.5 - 9.0
Phenols	0.1 milligram per liter and none that could impart odor or taste to fish flesh or other freshwater edible products such as crayfish,

	clams, prawns and like creatures. Where it seems probable that a discharge may result in tainting of edible aquatic products, bioassays and taste panels will be required to determine whether tainting is likely or present.
Turbidity value	25
Fecal coliform organisms	200 most probable number per 100 milliliters as a geometric mean nor equal or exceed 2000 most probable number per 100 milliliters in more than 10% of the samples.
Radioactive materials	Not to exceed the lowest concentrations permitted to be discharged to an uncontrolled environment as prescribed by the appropriate authority having control over their use.

For all classes of fisheries and recreation waters, the aquatic habitat, which includes the state waters and stream bed, shall not be degraded in any material manner, there shall be no material increase in undesirable slime growths or aquatic plants, including algae, nor shall there be any significant increase in harmful pesticide or other residues in the waters, sediments and aquatic flora and fauna; the normal fishery and lower aquatic biota upon which it is dependent and the use thereof shall not be seriously impaired or endangered, the species composition shall not be altered materially, and the propagation or migration of the fish and other biota normally present shall not be prevented or hindered by the discharge of any sewage, industrial waste or other waste effluents to the state waters.

No sewage, industrial waste or other wastes shall be discharged

into any of the state waters of this category so as to cause any material change in any other substances or characteristics which may impair the quality of the state waters or the aquatic biota of any of the above-listed classes or in any manner render them unsuitable or objectionable for fishing, fish culture or recreational uses. Additional selective limits or changes in the discharge bases may be imposed on the basis of local needs.

(3) Industrial Consumption

Class A The quality of this class of the waters of the state shall be such as to permit their use without chemical treatment, except softening for groundwater, for most industrial purposes, except food processing and related uses, for which a high quality of water is required. The quality shall be generally comparable to Class B waters for domestic consumption, except for the following:

Substance or Characteristic	Limit or Range
Chlorides (Cl)	50 milligrams per liter
Hardness	50 milligrams per liter
pH value	6.5 - 8.5
Fecal coliform organisms	200 most probable number per 100 milliliters

Class B The quality of this class of the waters of the state shall be such as to permit their use for general industrial purposes, except for food processing, with only a moderate degree of treatment. The quality shall be generally comparable to Class D waters used for domestic consumption, except the following:

Substance or Characteristic	Limit or Range
Chlorides (Cl)	100 milligrams per liter
Hardness	250 milligrams per liter
pH Value	6.0 - 9.0
Fecal Coliform Organisms	200 MPN/100 ml

Class C The quality of this class of the waters of the state shall be such as to permit their use for industrial cooling and materials transport without a high degree of treatment being necessary to avoid severe fouling, corrosion, scaling, or other unsatisfactory conditions. The parameters not to be exceeded shall be similar to those listed above for Class 3B except chlorides shall not exceed 250 milligrams per liter and hardness shall not exceed 500 milligrams per liter.

In addition to the above listed standards, no sewage, industrial waste or other wastes, treated or untreated, shall be discharged into or permitted by any person to gain access to any state waters classified for industrial purposes so as to cause any material impairment of their use as a source of industrial water supply.

(4) Agriculture and Wildlife

Class A The quality of this class of the waters of the state shall be such as to permit their use for irrigation without significant damage or adverse effects upon any crops or vegetation usually grown in the waters or area, including truck garden crops. The following concentrations or limits shall be used as a guide in determining the suitability of the waters for such uses, together with the recommendations contained in Handbook 60 published by the Salinity Laboratory of the U.S. Department of Agriculture, and any revisions, amendments or supplements thereto:

Substance or Characteristic	Limit or Range
Bicarbonates (HCO_3)	5 milliequivalents per liter
Boron (B)	0.5 milligram per liter
pH Value	6.0 - 8.5
Specific conductance	1,000 micromhos per centimeter

Substance or Characteristic	Limit or Range
Total dissolved salts	700 milligrams per liter
Sodium (Na)	60% of total cations as milliequivalents per liter
Fecal coliform organisms	200 most probable number per 100 milliliters
Sulfates (SO_4)	10 milligrams per liter, applicable to waters used for production of wild rice during periods when the rice may be susceptible to damage by high sulfate levels.
Radioactive materials	Not to exceed the lowest concentrations permitted to be discharged to an uncontrolled environment as prescribed by the appropriate authority having control over their use.

Class B The quality of this class of the waters of the state shall be such as to permit their use by livestock and wildlife without inhibition or injurious effects. The limits or concentrations of substances or characteristics given below shall not be exceeded in the state waters:

Substance or Characteristic	Limit or Range
pH value	6.0 - 9.0
Total salinity	1,000 milligrams per liter
Fecal coliform organisms	200 most probable number per 100 milliliters
Radioactive materials	Not to exceed the lowest concentrations permitted to be discharged to an uncontrolled environment as prescribed by the appropriate authority having control over their use.
Unspecified toxic substances	None at levels harmful either directly or indirectly.

Additional selective limits may be imposed for any specific state waters as needed.

(5) Navigation and Waste Disposal. The quality of this class of the waters of the state shall be such as to be suitable for esthetic enjoyment of scenery and to avoid any interference with navigation or damaging effects on property. The following limits or concentrations shall not be exceeded in the state waters:

Substance or Characteristic	Limit or Range
Fecal coliform organisms	200 most probable number per 100 milliliters
pH value	6.0 - 9.0
Hydrogen sulfide	0.02 milligrams per liter

Additional selective limits may be imposed for any specific state waters as needed.

(6) Other Uses. The uses to be protected in this class may be under other jurisdictions and in other areas to which the waters of the state are tributary, and may include any or all of the uses listed in the foregoing categories, plus any other possible beneficial uses. The Agency therefore reserves the right to impose any standards necessary for the protection of this class, consistent with legal limitations.

Additional general standards are contained in WPC-14 and 15.

TRIBUTARY WATER QUALITY AND LOADINGS

As a result of the Tributary Study, much baseline water quality, as well as loadings data, were obtained. Most stations have around 30

observations per regular parameter (see Table 3). This provides a fair statistical basis for making definitive judgements concerning stream water quality. In the discussion of the resultant data, reference will be made to the following terms:

Mean - the arithmetic average of all reliable values for a single parameter.

Range - the highest to the lowest value for a parameter

Standard Deviation - a range about the mean into which a given percentage of values will fall.

Maximum - the highest parameterical value

Minimum - the lowest parameterical value

Discussion of water quality and loadings data will be presented by sub-basin. The resultant data is contained in appendix A, and consists of STORET raw data summaries and loadings calculations for the streams.

Water Quality

The Nemadji River Sub-Basin

The Nemadji drains an area largely composed of erodible red clay. As a result, the physical parameters such as suspended solids, turbidity and color were frequently high during spring high flows and pluvial days. Turbidity values averaged 32 JTU for the two-year period, exceeding the state standard of 5 JTU on all but one occasion. Suspended solids values ranged from .4-540 mg/l. Scattered high values coincided to high flow/runoff periods.

The bacteriological quality of the Nemadji is marginal and the samples failed to meet the 10 MPN/100 ml fecal coliform standards 81% of the time (based on 31 samplings). They ranged from 5 - 3500 MPN/100 ml. The mean value was 188 MPN/100 ml.

The chemical quality of the Nemadji is fair. Dissolved oxygen (D.O.) values remained high throughout the course of the project, and 5-day biochemical oxygen demand (BOD_5) averaged 1.4 mg/l. D.O. fluctuations were attributable to seasonal temperature changes. The D.O. ranged from 8.4 mg/l to 15.1 mg/l. The mean value was 11.8 mg/l. Most phenol values exceeded the 1.0 µg/l standard, and this has to be attributed to natural conditions since there are no known point sources. Ammonia values ranged from <.05 - 0.34 mg/l with 20% of determinations above the 0.2 mg/l standard. Sixty-seven percent of all oil and grease samples exceeded the state standard of 0.5 mg/l maximum allowable concentration. The source of these high oil values could not be determined.

Copper values ranged from less than 10 to 730 µg/l. The scattered high values may be cause for some concern. Ten micrograms/liter is the standard for this stream. No point source could be identified to account for these violations.

St. Louis River Sub-Basin

The St. Louis River was sampled at two locations. The Oliver Bridge site, Highway 39 bridge (SL-4), was sampled from July-December, 1973, at which time it was moved downstream to St. Louis Bay (SLB-1). The move was

made to account for major discharges downstream of the old station. This move also provided better loading data from the St. Louis River to Lake Superior. The Oliver site was reactivated in April, 1975, at the request of U.S. EPA Region V and sampled concurrently with SLB-1 through the end of the project. The EPA felt that the Lake Superior seiche or tidal effects may interfere with flows and water quality at the Bay station. The St. Louis River exhibits the poorest water quality of the tributary streams.

The reach from Cloquet to Clough Island is represented by the Oliver Bridge station (SL-4). Samples were taken at this location from July-December, 1973, and from April-June, 1975. Low dissolved oxygen levels were recorded for both the July and August, 1973, samples. The results were 2.9 mg/l and 2.8 mg/l, respectively. The mean of 5-day biochemical oxygen demand values for the entire sampling period was 4.0 mg/l. Fecal coliform values exceeded the state standard of 200 MPN/100 ml 62% of the time. Values ranged from 20 - 4900 MPN/100 ml. Total coliform values were high, averaging 16,000 MPN/100 ml. Copper values varied from less than 10 to 470 µg/l with a mean value of 60 µg/l for 10 samples. These scattered high values are significant because it has been suggested that concentrations as low as 10 µg/l are harmful to fish, particularly in soft water (McKee and Wolf, 1963). It has also been shown that the toxicity of copper salts increases at lower dissolved oxygen levels (McKee and Wolf, 1963). The sporadic high values most likely are a result of non-point sources along the river. Phenol values were found to have a range of 2 µg/l to 52 µg/l and a mean of 12 µg/l. The Minnesota water quality standard for phenol is 10 µg/l. Iron and manganese values were found to

average 1856 µg/l and 92 µg/l, respectively, and are probably the result of natural deposits in the headwaters areas of the St. Louis River.

The St. Louis Bay Station at the I-535 Bridge was sampled from December, 1973 to June, 1975, and is downstream from all major dischargers so that the total loading from the St. Louis River to Lake Superior could be determined. Dissolved oxygen levels ranged from 2.2 mg/l in early April, 1974, before spring breakup, to 12.4 in late May, 1975. The bay is ice and snow covered during the winter months. This most likely contributes significantly to winter dissolved oxygen depletions by interfering with aeration. BOD_5 values averaged 3.2 mg/l for 25 observations. Most oil and grease determinations exceeded the 0.5 mg/l Minnesota water quality standard (5 observations). Forty-one percent of all copper values exceeded the ascribed 10 µg/l standard, ranging from 10 - 79 µg/l. There are also scattered high lead and zinc results coming from unidentified sources. Fecal coliform values ranged widely from <20 - 1700. Twenty-eight percent exceeded the 200 MPN/100 ml standard. The mean for fecal coliform values was 192 MPN/100 ml.

Lake Superior Sub-Basin

This section deals with all the target streams beginning with the Lester River in Duluth, and ending with the Pigeon River at the international border (15 total). These streams are of excellent water quality and share

certain physical, chemical and biological characteristics. These streams are similar to the Nemadji and St. Louis in that they have a high degree of natural coloration, attributable to tannins and humic acid added by their forested watersheds. These streams are shallow, except for the Pigeon, averaging around 1 - 2 feet (0.3 - 0.6 m) in depth. Their average width is about 20 - 30 feet (6 - 9 m). Winter flows are greatly reduced with some flows dropping to <1 cfs. All streams are ice covered during the winter months. The ice often reaches great thicknesses even though stream velocities are brisk. Open spots are only evident at waterfalls, plunge pools and at points of greatly increased velocities. Summer flows may vary greatly. During the summer, flows may drop but increase rapidly during pluvial days due to the fast runoff characteristics of the region.

Dissolved oxygen values were consistently high, always within 90% of saturation, because of the low organic loading and high aeration potential. This aeration is the result of high stream velocities over uneven rocky bottoms which causes a churning effect, and scattered waterfalls. Dissolved oxygen levels often reached supersaturation levels during the winter, when water temperatures approach 0°C and the plunging water courses promoted oxygen entrainment where the channels are not frozen.

High annual precipitation and low evaporation maintains low concentrations of salts in these streams. The mean chloride concentration was 3.4 mg/l. Both suspended solids and turbidity means for the period of record are low, averaging 5.9 mg/l and 5.2 mg/l, respectively. Increases in these parameters coincide fairly well with spring runoff and pluvial events.

From the Gooseberry River watershed south to Duluth, total hardness values fall in the 61 - 150 mg/l range which is considered medium hard water. North of the Gooseberry, soft water (<60 mg/l total hardness) predominates. Few dissolved minerals enter the streams in the shore region. Alkalinities are also naturally low, averaging 38 mg/l. A gradual decrease in stream alkalinity is realized from Duluth northward. Results in the southern portions of the basin average 40 - 65 mg/l while streams north of the Beaver River exhibit mean alkalinities in the 20 - 30 mg/l range.

Fecal coliform values exceed the strict 10 MPN/100 ml Minnesota standard 58% of the time (based on a total of 464 samples). Values ranged from 2 - 170 MPN/100 ml. The mean fecal coliform value was 47 MPN/100 ml.

Iron values were consistantly high. Seventy-three percent of all samples violated the 300 µg/l Minnesota standard. Fourteen percent of manganese results were above the state standard of 50 µg/l. There were two high copper values, 100 µg/l on the Knife River and 75 µg/l on the Lester River. Most streams reported one or two values in excess of the 10 µg/l Minnesota standard. Copper, like iron, nickel, and manganese, is from non-point sources in this region, occurring in natural deposits. The French, Sucker and Poplar Rivers reported high lead values of 62, 67 and 130 µg/l, respectively. The source of the lead is unknown.

Ammonia nitrogen values exceeded the 0.2 mg/l Minnesota standard 10% of the time. A high value of 1.5 mg/l was recorded on the Poplar River.

Oil and grease results were in excess of the Minnesota standard 56% of the time (based on 88 samples). Phenol values frequently exceeded the Minnesota standard of 1 µg/l. The total number of samples exceeding the standard can not be determined since the lab analysis had a lower limit of 2 µg/l.

Stream Loadings

On many of the streams, average streamflows were greater in 1975 than at other times during the course of the project, particularly in the southern portion of the basin. This was due to increased precipitation. As a result, loadings increased on many of the tributaries from 1973-75.

The St. Louis Bay station averaged 930 kg/day (2,055 lbs/day) total phosphorus, while the total loading from all tributaries studied averaged 1,455 kg/day (3,215 lbs/day).

Nemadji River suspended solids loadings averaged 89,500 kg/day (197,800 lbs/day) during the observation period. This figure approaches the 97,096 kg/day (214,600 lbs/day) total for all the tributaries excluding the Nemadji and St. Louis Rivers. The Nemadji's drainage area above the sampling point is less than 10% of the total d-ainage area above the sampling points for all the other streams excluding the St. Louis and Nemadji Rivers.

The St. Louis River carries an average suspended solids load of 179,000 kg/day (395,600 lbs/day) and 1,300,000 kg/day (2.87×10^6 lbs/day) total solids. These figures are based on data from the St. Louis Bay station (SLB-1).

Five-day biochemical oxygen demand loads are light on all but the St. Louis River, overall means ranged from 83.4 kg/day (184 lbs/day) on the French River to 26,600 kg/day (58,800 lbs/day) for the St. Louis River (SLB-1). The total loading for all tributaries except the St. Louis River is 10,436 kg/day (23,064 lbs/day). The St. Louis carries over two times the BOD loading of all other tributaries combined.

Chloride concentrations are light in all North Shore streams except the St. Louis River (SLB-1) which loads 103,000 kg/day (227,630 lbs/day) into Lake Superior. The other tributaries combined load 25,515 kg/day (56,388 lbs/day) into the lake.

Loadings of other parameters are shown in appendix A.

SEWAGE TREATMENT PLANT EFFLUENT QUALITY AND LOADINGS

The four sewage treatment plants discharging directly to Lake Superior were sampled on a regular basis during the Lake Superior study (Table 2). Effluent quality for these plants was poor during this period. It must be noted that the treatment plants at Two Harbors, Silver Bay and Grand Marais were being upgraded during the survey period and not operating at full efficiency most of the time. This construction at these treatment plants was not completed during the study period. Taconite Harbor's sewage treatment plant is planned to be replaced by a soil absorption field. A summary of loadings from these treatment plants is given in appendix A and the actual values obtained at each sampling date is shown in appendix B.

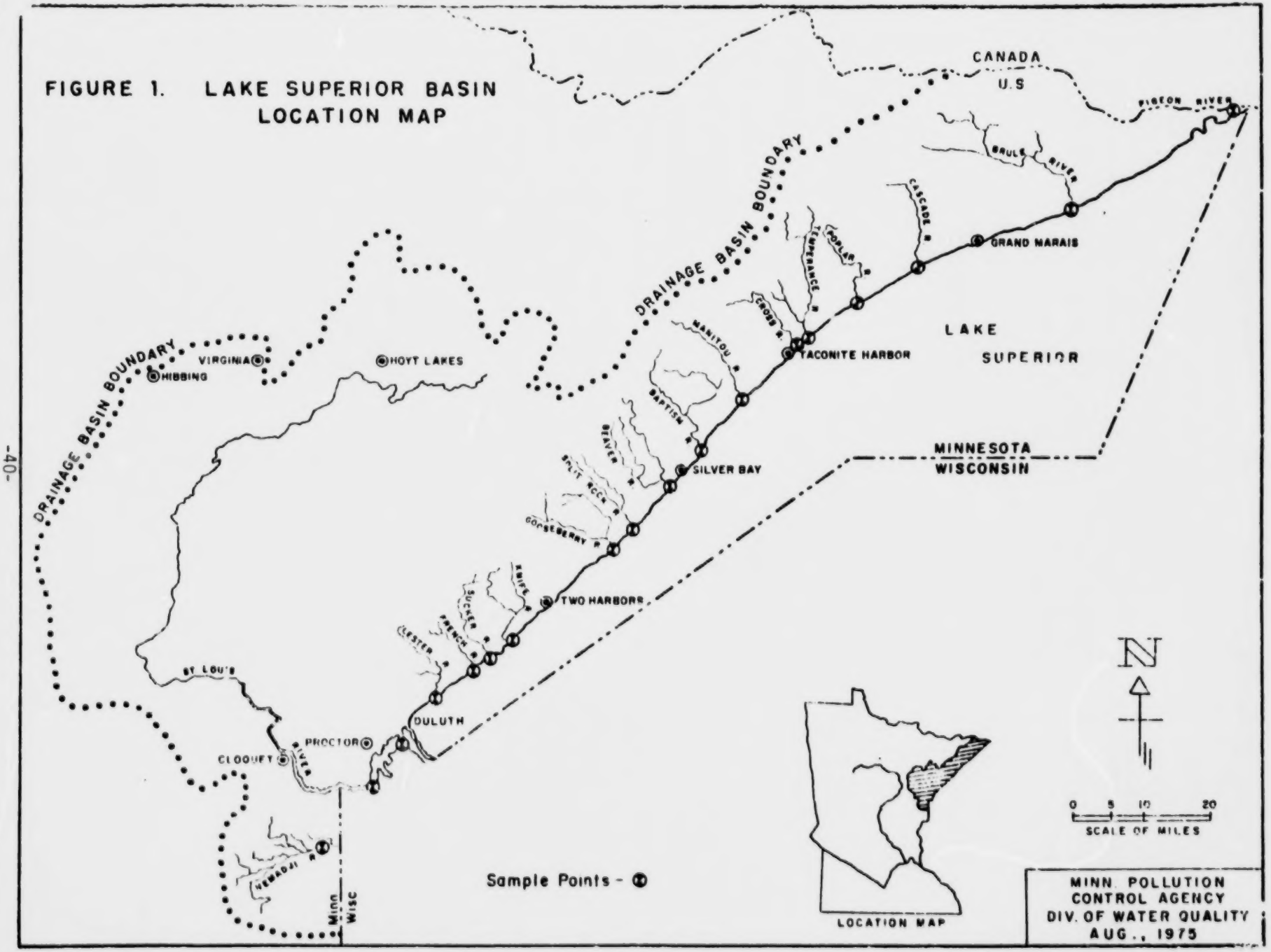
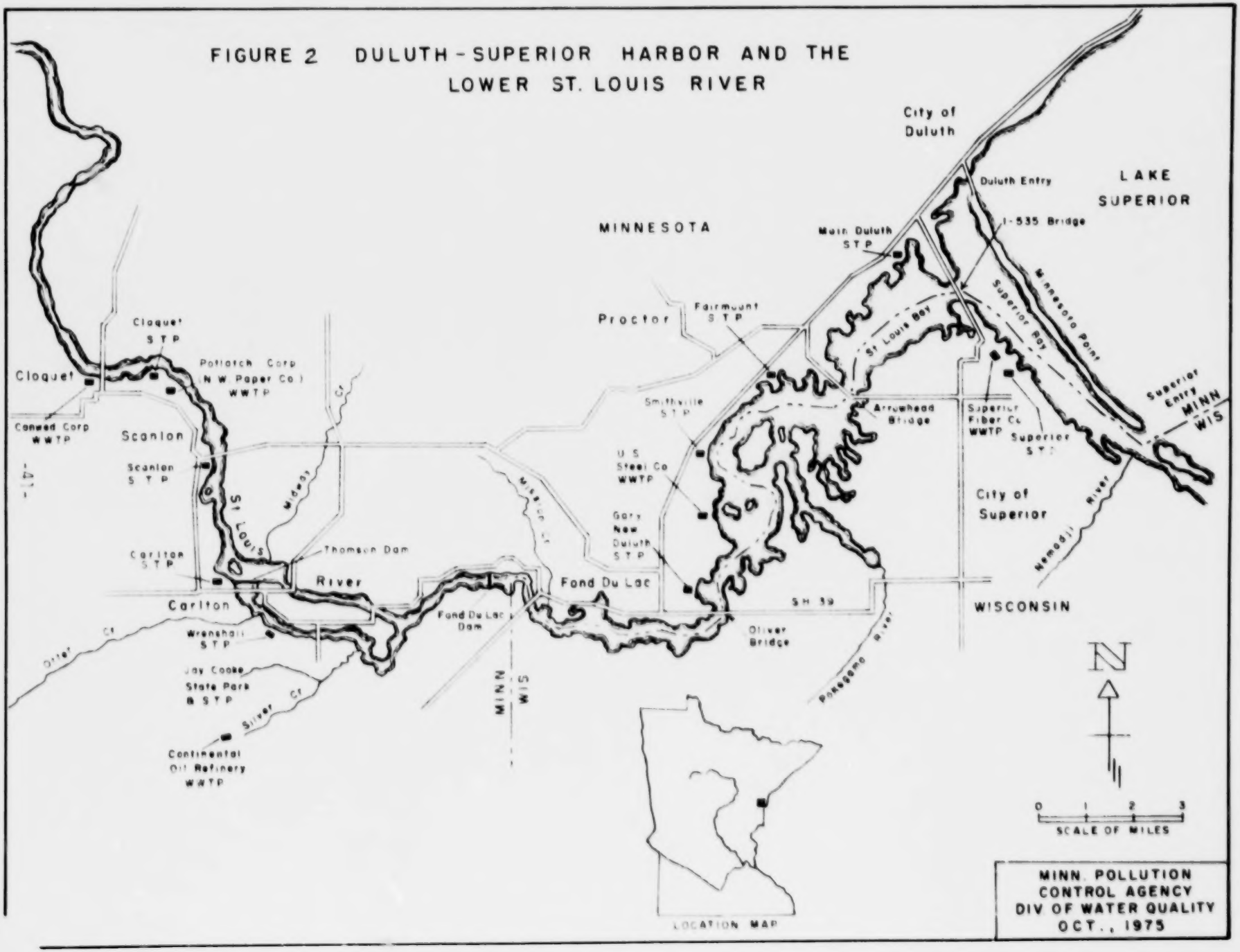


FIGURE 1. LAKE SUPERIOR BASIN
LOCATION MAP
CANADA
U.S
PIGEON RIVER
BRULE RIVER
CASCADE R.
GRAND MARAIS
TEMPERANCE R.
POPLAR R.
CROSS R.
MANITOU R.
TACONITE HARBOR
LAKE
SUPERIOR
DRAINAGE BASIN BOUNDARY
DRAINAGE BASIN BOUNDARY
VIRGINIA
HIBBING
HOYT LAKES
BAPTISM R.
BEAVER R.
SILVER BAY
MINNESOTA
WISCONSIN
SPLIT ROCK R.
GOOSEBERRY R.
KNIFE R.
TWO HARBORS
SUCKER R.
FRENCH R.
LESTER R.
ST LOUIS
DULUTH
PROCTOR
CLOQUET
RIVER
NEMADJI R.
Minn
Wisc
Sample Points - ⊙
LOCATION MAP
N
0 5 10 20
SCALE OF MILES
MINN. POLLUTION
CONTROL AGENCY
DIV. OF WATER QUALITY
AUG., 1975

FIGURE 2 DULUTH - SUPERIOR HARBOR AND THE LOWER ST. LOUIS RIVER



MINNESOTA POLLUTION CONTROL AGENCY
Division of Water Quality

TABLE 1

LAKE SUPERIOR TRIBUTARIES STATION LIST

Agency Number for Tributaries = 21MINN Station Type = 02111204

Stream	Coordinates	Primary STORET No.	Secondary STORET No.	Description
Nemadji	(46-31-04) (92-23-21)	LSNE--8---17E67	NE-8	SH-23 bridge crossing near Wrenshall on upstream side
St. Louis River	(46-40-36) (92-12-09)	014	SL-4	SH-39 bridge crossing at Oliver on upstream side (abandoned 12/73 in favor of SLB-1)
St. Louis Bay	(46-37-00) (92-06-02)	030	SLB-1	Beneath I-535 bridge, Superior Wisconsin
Lester	(46-49-45) (92-00-25)	015	LE-0.2	100' upstream of foot bridge at Lester Park, Duluth
French	(46-54-06) (91-53-30)	016	FR-0.1	100' above USH-61 bridge at French River Hatchery
Sucker	(46-55-22) (91-50-54)	017	SUC-0.2	USH-61 bridge near Palmers on downstream side
Knife	(46-57-03) (91-46-48)	018	KN-0.2	500' upstream of USH-61 bridge at Knife River
Gooseberry	(47-08-24) (91-27-24)	019	GR-0.8	100' downstream of USH-61 bridge near Castle Danger
Split Rock	(47-10-52) (91-24-21)	020	SPL-0.1	500' upstream of USH-61 bridge 1 mi. so. of Split Rock Point
Beaver	(47-15-83) (91-16-66)	021	BV-4	1½ mi. sw. on CSAH 3 from junction of CSAH 4, 1½ mi. no. of Beaver Bay
Baptism	(47-20-00) (91-12-00)	022	BP-0.1	USH-61 bridge 2 mi. so. of Illegen City on upstream side
Manitou	(47-26-33) (91-04-12)	023	MAN-1	USH-61 bridge 3 mi. no. of Little Marais on downstream side

LAKE SUPERIOR TRIBUTARIES STATION LIST
(continued)

Stream	Coordinates	Primary STORET No.	Secondary STORET No.	Description
Temperance	(47-37-00) (90-56-66)	024	TEM-8	Maple Leaf Drive (NFD) bridge off the Sawbill Trail 5 mi. no. of Tofte on upstream side
Cross	(47-32-39) (90-53-48)	025	CRS-0.5	500' upstream of USH-61 bridge at Schroeder
Poplar	(47-38-07) (90-42-24)	026	POP-0	Upper Lutsen Lodge bridge on downstream side at Lutsen
Cascade	(47-40-26) (90-31-30)	027	CAS-0	USH-61 bridge 10 mi. SW of Grand Marais on upstream side
Brule	(47-49-12) (90-03-03)	028	BRU-0.4	USH-61 bridge 4 mi. SW of Hovland on downstream side
Pigeon	(48-00-44) (89-36-58)	029	PIG-3.5	Middle Falls on the Pigeon River 2.5 mi. from USH-61 International bridge on Ontario Highway 593 (bank samples above falls)
		WASTEWATER TREATMENT PLANTS		
	Agency Number for STP's = 21MINNS		Station type for STP's = 2244440	
Two Harbors	(47-00-38) (91-39-56)	0206	TH-STP	Two Harbors sewage treatment plant, Two Harbors, Minnesota
Silver Bay	(47-17-32) (91-14-58)	0207	SB-STP	Silver Bay sewage treatment plant, Silver Bay, Minnesota
Taconite Harbor	(47-30-52) (90-56-19)	0208	TACH-STP	Taconite Harbor sewage treatment plant, Taconite Harbor, Minnesota
Grand Marais	(47-46-40) (90-19-52)	0209	GM-STP	Grand Marais sewage treatment plant, Grand Marais, Minnesota

MPCA. Division of Water Quality

Table 2

Items for composite sampling for municipal sources conducted quarterly:

Chemical

5-day BOD
hardness
alkalinity
total phosphorus
organic nitrogen
nitrite nitrogen
nitrate nitrogen
chloride
phenols
sulfate
silica
arsenic
selenium
calcium
sodium
potassium
fluoride

Metals

copper
cadmium
nickel
zinc
lead
mercury
chromium
iron
manganese

Physical

total solids
suspended solids
total dissolved solids
turbidity
conductivity

Radiological

Gross alpha
Gross beta

Items for 8 grab samples per year on municipal sources:

Chemical

5-day BOD
hardness
alkalinity
total phosphorus
organic nitrogen
ammonia nitrogen
nitrite nitrogen
nitrate nitrogen
chloride
calcium
sodium
potassium
fluoride
silica
phenols

Physical

total solids
suspended solids
total dissolved solids
turbidity
conductivity

MPCA. Division of Water Quality

Table 3

Monthly Tributary Parameters:

Microbiological	Physical
total coliform	flow
fecal coliform	temperature
	pH
	conductivity
	turbidity
	suspended solids
	total solids
	total dissolved solids

Chemical

total hardness	biochemical oxygen demand
dissolved oxygen	ammonia nitrogen
total phosphorus	nitrate nitrogen
nitrite nitrogen	organic nitrogen
chloride	total nitrogen
fluoride	sulfate
cadmium	copper
zinc	nickel
iron	lead
calcium	manganese
potassium	sodium
silica	phenol
alkalinity	

Supplemental tributary parameters for sampling 3 times yearly:

Gross beta	Beta error
Tritium	Tritium error
Strontium	Strontium error
Radium	Radium error
Pesticides	Oil and grease
Selenium	Cyanide
Total organic carbon (TOC)	Chemical oxygen demand (COD)
Barium	Arsenic
Mercury	Chromium
Magnesium	

MINNESOTA POLLUTION CONTROL AGENCY
Division of Water Quality

Table 4

LIST OF CHEMICAL PARAMETERS AND ANALYTICAL METHODS
ANALYSIS PERFORMED BY MINNESOTA DEPARTMENT OF HEALTH LABORATORY

Parameters	Methods	Reference
Alkalinity	Potentiometric, end point, pH 4.5	1
Gross Alpha & Gross Beta	Evaporation, internal proportional counter	1
Arsenic	Colorimetric silver diethyldithio-carbamate	1
Barium	Atomic absorption after precipitation isolation	8
5-Day BOD	BOD method	1
Calcium	Selective ion electrode or atomic absorption	6 8
Carbon, Total Organic	Beckman analyzer	1
Chemical Oxygen Demand	EPA small sample modification	8
Chloride	Selective ion electrode or Hg SCN method	6 8
Chromium, Total	Atomic absorption, heated graphite atomizer, acidified, unfiltered	1
Coliform, Total	Multiple tube technique	1
Coliform, Fecal	Multiple tube technique	1
Color	Platinum colbalt method	1
Conductance, Specific	Wheatstone bridge type meter	1
Cyanide, Total	Oxidation of cyanide followed by reaction with barbiturate reagent	1, 8
Fluoride	Selective ion electrode	1
Hardness, Total	Selective ion electrode or unfiltered atomic absorption	6 8

Table 4 (continued)

Parameters	Methods	Reference
Magnesium	Atomic absorption or electrode hardness less electrode calcium	8 6
Mercury	Atomic absorption, cold vapor technique	4
Metals, Heavy -Copper -Cadmium -Manganese -Zinc -Nickel -Iron -Lead	Pulse polarography after ashing in nitric acid and precipitation isolation	2
Nitrogen, Total	Sum of ammonia, organic nitrogen, nitrate, and nitrite values	
Nitrogen, Ammonia & Organic	Kjeldahl distillation, colorimetric nesslerization	8
Nitrogen, Nitrite	Colorimetric	8
Nitrogen, Nitrate	Colorimetric, cadmium reduction	5
Oil and Grease	Chloroform or freon extraction	8
Chlorinated Hydrocarbon Pesticides	Extraction, separation, and gas chromatographic technique	8
pH	Glass electrode	1
Phenolic Compounds	MBTH method with distillation	3
Phosphorus, Total	Colorimetric ascorbic acid reduction method, single reagent or colorimetric stannous chloride method	8 1
Phosphorus, Dissolved	Filtered through glass fiber filter, Reeve-Angel 934 AH, prior to phosphorus determination	8
Potassium	Selective ion electrode or Atomic absorption	6 8
Radium	Alpha detection followed by gamma scan	1

Table 4 (continued)

Parameters	Methods	Reference
Selenium	Hydride vapor atomic absorption	8
Silica	Colorimetric reactive silica	1
Sodium	Selective ion electrode or Atomic absorption	6 8
Solids, Total	Gravimetric procedure	1
Solids, Suspended	Gravimetric procedure, filtered through Reeve-Angel 934-AH glass fiber filter	1
Strontium - 90	Isotope separation and beta count	1
Sulfate	Turbidimetric	1
Tritium	Liquid scintillation counting method	1
Turbidity	Nephelometric, Hach Turbidimeter	1

References for Analytical Methods

1. American Public Health Association, Standard Methods for the Examination of Water and Wastewater, Thirteenth Edition, 1971.

2. Frazier, R.E., Journal of the American Water Works Association, Vol. 64, No. 6, pp 391-3, "Pulse Polarography", June 1973.

3. Friestad, H.O. and Ott, D.E. and Gunther, F.A., Analytical Chemistry, Vol. 41, #13, pages 1750-1754, "Automated Colorimetric Microdetermination of Phenols by Oxidative Coupling with 3- Methyl-2 Benzothiazolinone Hydrazone" No., 1969.

4. Hatch, W.R. and W.H. Ott, Analytical Chemistry, Vol. 40, pages 2085-2087, "Determination of Submicrogram Quantities of Mercury Absorption Spectrophotometry", 1968.

5. Lambert, Raymond S. and Ronald J. DuBois, Analytical Chemistry, Vol. 43, No. 7, "Spectrophotometric Determination of Nitrate in the Presence of Chloride", June, 1971.

6. Orion Research, Inc., Analytical Methods Guide, Sixth Edition, August, 1973.

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7. Perkin-Elmer Corporation, Atomic Absorption Products Department, Analytical Methods for Atomic Absorption Spectroscopy Using the HGA Graphite Furnace, Rev. December, 1974.

8. U.S. Environmental Protection Agency, Office of Technology Transfer, Methods for Chemical Analysis of Water and Wastes, 1974.

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Minnesota Pollution Control Agency, Division of Water Quality, "Water Quality Management Plan, Lake Superior Basin", July, 1971.

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State of Minnesota, Department of Conservation, Division of Waters, Bulletin 24, "The Lake Superior Watershed Unit", February, 1966.

Schwartz, G.M. and Thiel, G.A., Minnesota's Rocks and Waters, the University of Minnesota Press, Minneapolis, 1963.

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Appendix A

Data summaries contained in this appendix are similar to the Minnesota data summaries that will be used by the IJC Upper Lakes Reference Group to develop the Lake Superior Report. A separate page is presented for each of the parameters sampled. The complete list of all the data collected in this study appears in appendix B.

The following comments are provided on these data summaries:

1) The parameter name is at the upper top of each page.

2) The tributary (T) and municipal (M) sources which have been measured are listed alphabetically. The St. Louis River station in St. Louis Bay is used in these summaries.

3) Mean loadings are calculated as follows: where N = number of samples:

$$\text{mean loading in kg/day} = \frac{1}{N} \sum_{i=1}^{N} (\text{conc. in mg/l})_i (\text{flow in } \frac{m^3}{\text{sec}})_i (86.4)$$

4) If $\bar{L}$ = mean loading and L_i = the individual loading values, then standard deviation is calculated as follows:

$$\text{standard deviation in kg/day} = \sqrt{\frac{\sum_{i=1}^{N} (L_i - \bar{L})^2}{N-1}}$$

5) When all concentrations for a particular parameter at a tributary or municipal discharge are less than the limit of detection, the mean concentration and mean loadings are listed as "ND" (not detectable). When some of the concentrations are not detectable and some have measurable values, a value equal to one-half of the limit of detection is used in place of each non-detectable result when calculating mean concentrations and loadings.

6) For parameters where loading calculations are not applicable, an "NA" is indicated (such as dissolved oxygen, pH, and turbidity). An "NS" is indicated where a parameter was not sampled.

7) Total dissolved solids in this summary is obtained by multiplying conductivity in micromhos/cm by 0.65.

UPPER GREAT LAKES LAND SOURCE INPUTS

LAKE BASIN: SUPERIOR
REPORTING AGENCY: MINNESOTA

PARAMETER: ALKALINITY
EXP. AS: CARBONATE
PARAMETER TYPE: TOTAL
LOWER LIMIT OF DETECTION: 10 MG/L

PERIOD OF RECORD
07-01-73 THRU 06-30-75

	INPUT SOURCES	INPUT TYPE	NO. OF SAMPLES	MEAN CONCENTRATION MG/L	MEAN FLOW (M3/SEC)	MEAN LOADING (KG/DAY)	STANDARD DEVIATION FOR LOADING (KG/DAY)
1	GRAND MARAIS WWTP	M	19	122	.006	68.5	26.3
2	SILVER BAY WWTP	M	18	135	.022	292	295
3	TACONITE HARBOR WWTP	M	18	135	.000	0.15	0.04
4	TWO HARBORS WWTP	M	19	109	.074	714	359
1	BAPTISM RIVER	T	31	30	8.86	14,300	21,800
2	BEAVER RIVER	T	31	42	5.63	9,470	9,800
3	BRULE RIVER	T	31	16	8.73	8,940	9,580
4	CASCADE RIVER	T	31	24	3.96	5,790	4,700
5	CROSS RIVER	T	30	22	3.47	4,840	3,540
6	FRENCH RIVER	T	30	59	.886	2,860	4,050
7	GOOSEBERRY RIVER	T	31	49	2.74	6,710	8,210
8	KNIFE RIVER	T	31	53	2.96	7,660	9,050
9	LESTER RIVER	T	31	62	2.18	6,190	5,980
10	MANITOU RIVER	T	31	29	4.42	6,730	7,660
11	NEMADJI RIVER	T	31	78	4.45	23,100	26,200
12	PIGEON RIVER	T	31	29	25.9	52,300	42,300
13	POPLAR RIVER	T	31	24	5.60	8,310	7,790
14	SPLIT ROCK RIVER	T	31	52	2.34	6,550	12,200
15	ST. LOUIS BAY (RIVER STATION)	T	25	53	112	400,000	363,000
16	SUCKER RIVER	T	31	66	1.64	5,790	8,540
17	TEMPERANCE RIVER	T	30	22	5.29	7,880	8,770

LBS/DAY = KG/DAY * 2.21
CFS = M3/SEC * 35.3
11/06/75

UPPER GREAT LAKES LAND SOURCE INPUTS

LAKE BASIN: SUPERIOR
REPORTING AGENCY: MINNESOTA

PARAMETER: ARSENIC
EXP. AS: ARSENIC
PARAMETER TYPE: TOTAL
LOWER LIMIT OF DETECTION: 0.01 MG/L

PERIOD OF RECORD
07-01-73 THRU 06-30-75

	INPUT SOURCES	INPUT TYPE	NO. OF SAMPLES	MEAN CONCENTRATION MG/L	MEAN FLOW (M3/SEC)	MEAN LOADING (KG/DAY)	STANDARD DEVIATION FOR LOADING (KG/DAY)
1	GRAND MARAIS WWTP	M	6	ND	.006	ND	
2	SILVER BAY WWTP	M	6	ND	.018	ND	
3	TACONITE HARBOR WWTP	M	6	ND	.000	ND	
4	TWO HARBORS WWTP	M	6	0.01	.077	0.04	0.03
1	BAPTISM RIVER	T	6	ND	14.6	ND	
2	BEAVER RIVER	T	6	ND	10.1	ND	
3	BRULE RIVER	T	6	ND	9.61	ND	
4	CASCADE RIVER	T	6	0.01	5.96	3.28	2.59
5	CROSS RIVER	T	6	ND	3.82	ND	
6	FRENCH RIVER	T	6	ND	2.23	ND	
7	GOOSEBERRY RIVER	T	6	ND	5.66	ND	
8	KNIFE RIVER	T	6	ND	6.48	ND	
9	LESTER RIVER	T	7	ND	4.70	ND	
10	MANITOU RIVER	T	6	ND	7.13	ND	
11	NEMADJI RIVER	T	7	ND	8.36	ND	
12	PIGEON RIVER	T	6	ND	36.8	ND	
13	POPLAR RIVER	T	6	ND	9.62	ND	
14	SPLIT ROCK RIVER	T	6	ND	3.06	ND	
15	ST. LOUIS BAY (RIVER STATION)	T	6	ND	133	ND	
16	SUCKER RIVER	T	6	ND	3.23	ND	
17	TEMPERANCE RIVER	T	6	0.01	7.72	4.59	4.53

LBS/DAY = KG/DAY * 2.21
CFS = M3/SEC * 35.3
11/06/75

UPPER GREAT LAKES LAND SOURCE INPUTS

LAKE BASIN: SUPERIOR
REPORTING AGENCY: MINNESOTA

PARAMETER: BARIUM
EXP. AS: BARIUM
PARAMETER TYPE: TOTAL
LOWER LIMIT OF DETECTION: (0.01-0.02) MG/L

PERIOD OF RECORD
07-01-73 THRU 06-30-75

	INPUT SOURCES	INPUT TYPE	NO. OF SAMPLES	MEAN CONCENTRATION MG/L	MEAN FLOW (M3/SEC)	MEAN LOADING (KG/DAY)	STANDARD DEVIATION FOR LOADING (KG/DAY)
1	GRAND MARAIS WWTP	M	3	.028	.006	0.01	0.01
2	SILVER BAY WWTP	M	3	.208	.020	0.21	0.21
3	TACONITE HARBOR WWTP	M	3	ND	.000	ND	
4	TWO HARBORS WWTP	M	3	.033	.080	0.20	0.10
1	BAPTISM RIVER	T	6	ND	14.6	ND	
2	BEAVER RIVER	T	6	ND	10.1	ND	
3	BRULE RIVER	T	6	ND	9.61	ND	
4	CASCADE RIVER	T	6	ND	5.96	ND	
5	CROSS RIVER	T	6	ND	3.82	ND	
6	FRENCH RIVER	T	6	ND	2.23	ND	
7	GOOSEBERRY RIVER	T	6	ND	5.66	ND	
8	KNIFE RIVER	T	6	ND	6.48	ND	
9	LESTER RIVER	T	6	.022	5.44	11.0	21.0
10	MANITOU RIVER	T	6	ND	7.13	ND	
11	NEMADJI RIVER	T	5	.043	5.17	47.4	103
12	PIGEON RIVER	T	6	ND	36.8	ND	
13	POPLAR RIVER	T	6	ND	9.62	ND	
14	SPLIT ROCK RIVER	T	6	ND	3.06	ND	
15	ST. LOUIS BAY (RIVER STATION)	T	5	ND	151	ND	
16	SUCKER RIVER	T	6	ND	3.23	ND	
17	TEMPERANCE RIVER	T	6	ND	7.72	ND	

LBS/DAY = KG/DAY * 2.21
CFS = M3/SEC * 35.3
11/06/75

UPPER GREAT LAKES LAND SOURCE INPUTS

LAKE BASIN: SUPERIOR
REPORTING AGENCY: MINNESOTA

PARAMETER: BIOCHEMICAL OXYGEN DEMAND
EXP. AS: 5-DAY BOD
LOWER LIMIT OF DETECTION: 0.5 MG/L

PERIOD OF RECORD
07-01-73 THRU 06-30-75

	INPUT SOURCES	INPUT TYPE	NO. OF SAMPLES	MEAN CONCENTRATION MG/L	MEAN FLOW (M3/SEC)	MEAN LOADING (KG/DAY)	STANDARD DEVIATION FOR LOADING (KG/DAY)
1	GRAND MARAIS WWTP	M	15	105.5	.007	65.0	62.9
2	SILVER BAY WWTP	M	15	34.9	.020	56.4	54.8
3	TACONITE HARBOR WWTP	M	15	18.1	.000	0.02	0.03
4	TWO HARBORS WWTP	M	16	56.1	.070	335	194
1	BAPTISM RIVER	T	31	1.1	8.86	1,140	2,750
2	BEAVER RIVER	T	31	1.0	5.63	439	672
3	BRULE RIVER	T	31	1.2	8.73	1,050	1,720
4	CASCADE RIVER	T	31	1.2	3.96	481	908
5	CROSS RIVER	T	30	1.1	3.47	407	776
6	FRENCH RIVER	T	31	1.0	.884	83.4	158
7	GOOSEBERRY RIVER	T	31	0.9	2.74	176	334
8	KNIFE RIVER	T	31	1.0	2.96	304	557
9	LESTER RIVER	T	31	1.0	2.18	197	376
10	MANITOU RIVER	T	31	1.0	4.42	499	895
11	NEMADJI RIVER	T	31	1.4	4.45	619	988
12	PIGEON RIVER	T	31	1.3	25.9	3,230	5,190
13	POPLAR RIVER	T	31	1.4	5.60	1,020	2,330
14	SPLIT ROCK RIVER	T	31	1.0	2.34	177	364
15	ST. LOUIS BAY (RIVER STATION)	T	25	3.2	112	26,600	29,100
16	SUCKER RIVER	T	31	1.1	1.64	153	291
17	TEMPERANCE RIVER	T	31	1.0	5.83	461	558

LBS/DAY = KG/DAY * 2.21
CFS = M3/SEC * 35.3
11/06/75

UPPER GREAT LAKES LAND SOURCE INPUTS

LAKE BASIN: SUPERIOR
REPORTING AGENCY: MINNESOTA

PARAMETER: CADMIUM
EXP. AS: CADMIUM
PARAMETER TYPE: TOTAL
LOWER LIMIT OF DETECTION: 0.01 MG/L

PERIOD OF RECORD
07-01-73 THRU 06-30-75

	INPUT SOURCES	INPUT TYPE	NO. OF SAMPLES	MEAN CONCENTRATION MG/L	MEAN FLOW (M3/SEC)	MEAN LOADING (KG/DAY)	STANDARD DEVIATION FOR LOADING (KG/DAY)
1	GRAND MARAIS WWTP	M	6	0.01	.006	0.00	0.00
2	SILVER BAY WWTP	M	6	0.02	.018	0.02	0.02
3	TACONITE HARBOR WWTP	M	6	0.01	.000	0.00	0.00
4	TWO HARBORS WWTP	M	6	0.01	.077	0.04	0.03
1	BAPTISM RIVER	T	26	ND	9.79	ND	
2	BEAVER RIVER	T	25	ND	6.64	ND	
3	BRULE RIVER	T	27	0.01	9.48	4.28	4.05
4	CASCADE RIVER	T	27	ND	4.15	ND	
5	CROSS RIVER	T	26	ND	3.49	ND	
6	FRENCH RIVER	T	26	ND	1.00	ND	
7	GOOSEBERRY RIVER	T	26	ND	2.84	ND	
8	KNIFE RIVER	T	26	0.01	3.29	1.44	2.56
9	LESTER RIVER	T	25	ND	2.57	ND	
10	MANITOU RIVER	T	26	ND	4.84	ND	
11	NEMADJI RIVER	T	25	ND	5.16	ND	
12	PIGEON RIVER	T	27	ND	28.4	ND	
13	POPLAR RIVER	T	27	ND	5.91	ND	
14	SPLIT ROCK RIVER	T	26	ND	2.66	ND	
15	ST. LOUIS BAY (RIVER STATION)	T	22	ND	121	ND	
16	SUCKER RIVER	T	26	ND	1.79	ND	
17	TEMPERANCE RIVER	T	26	0.01	6.34	3.02	3.05

LBS/DAY = KG/DAY * 2.21
CFS = M3/SEC * 35.3
11/06/75

UPPER GREAT LAKES LAND SOURCE INPUTS

LAKE BASIN: SUPERIOR
REPORTING AGENCY: MINNESOTA

PARAMETER: CALCIUM
EXP. AS: MG/L AS CALCIUM CARBONATE
PARAMETER TYPE: DISSOLVED
LOWER LIMIT OF DETECTION: 10 MG/L AS CACO3

PERIOD OF RECORD
07-01-73 THRU 06-30-75

	INPUT SOURCES	INPUT TYPE	NO. OF SAMPLES	MEAN CONCENTRATION MG/L	MEAN FLOW (M3/SEC)	MEAN LOADING (KG/DAY)	STANDARD DEVIATION FOR LOADING (KG/DAY)
1	GRAND MARAIS WWTP	M	20	60	.006	32.9	4.86
2	SILVER BAY WWTP	M	18	75	.022	151	114
3	TACONITE HARBOR WWTP	M	19	102	.000	0.12	0.03
4	TWO HARBORS WWTP	M	19	61	.074	385	159
1	BAPTISM RIVER	T	29	28	8.82	22,000	48,800
2	BEAVER RIVER	T	30	31	5.70	8,470	10,500
3	BRULE RIVER	T	31	13	8.73	7,980	6,520
4	CASCADE RIVER	T	31	17	3.96	5,040	4,690
5	CROSS RIVER	T	30	18	3.33	4,470	4,090
6	FRENCH RIVER	T	28	42	.914	2,180	3,260
7	GOOSEBERRY RIVER	T	28	37	2.54	5,020	7,710
8	KNIFE RIVER	T	29	39	3.04	6,460	9,080
9	LESTER RIVER	T	31	46	2.18	4,840	5,700
10	MANITOU RIVER	T	30	23	4.33	6,680	9,280
11	NEMADJI RIVER	T	31	59	4.45	19,200	25,700
12	PIGEON RIVER	T	31	22	25.9	43,400	37,900
13	POPLAR RIVER	T	30	21	5.57	8,200	8,750
14	SPLIT ROCK RIVER	T	29	39	2.38	5,340	9,360
15	ST. LOUIS BAY (RIVER STATION)	T	25	44	112	352,000	350,000
16	SUCKER RIVER	T	29	43	1.66	3,960	5,910
17	TEMPERANCE RIVER	T	29	19	5.28	8,350	12,100

LBS/DAY = KG/DAY * 2.21
CFS = M3/SEC * 35.3
11/06/75

UPPER GREAT LAKES LAND SOURCE INPUTS

LAKE BASIN: SUPERIOR
REPORTING AGENCY: MINNESOTA

PARAMETER: CARBON, TOTAL ORGANIC
EXP. AS: TOTAL ORGANIC CARBON
PARAMETER TYPE: TOTAL
LOWER LIMIT OF DETECTION: 5 MG/L

PERIOD OF RECORD
07-01-73 THRU 06-30-75

	INPUT SOURCES	INPUT TYPE	NO. OF SAMPLES	MEAN CONCENTRATION MG/L	MEAN FLOW (M3/SEC)	MEAN LOADING (KG/DAY)	STANDARD DEVIATION FOR LOADING (KG/DAY)
1	GRAND MARAIS WWTP	M	NS				
2	SILVER BAY WWTP	M	NS				
3	TACONITE HARBOR WWTP	M	NS				
4	TWO HARBORS WWTP	M	NS				
1	BAPTISM RIVER	T	12	13	12.5	14,000	17,000
2	BEAVER RIVER	T	10	15	7.45	9,020	14,100
3	BRULE RIVER	T	10	9	11.6	9,710	8,860
4	CASCADE RIVER	T	10	10	5.32	5,440	6,480
5	CROSS RIVER	T	11	13	4.30	5,090	5,240
6	FRENCH RIVER	T	12	13	1.36	1,770	3,010
7	GOOSEBERRY RIVER	T	12	13	3.79	4,750	8,520
8	KNIFE RIVER	T	12	13	3.86	4,720	10,200
9	LESTER RIVER	T	13	14	3.56	4,180	6,860
10	MANITOU RIVER	T	12	13	6.54	7,570	9,720
11	NEMADJI RIVER	T	13	12	6.63	8,720	15,200
12	PIGEON RIVER	T	8	12	42.3	45,300	39,600
13	POPLAR RIVER	T	13	12	8.39	8,680	9,900
14	SPLIT ROCK RIVER	T	12	13	1.65	2,220	4,710
15	ST. LOUIS BAY (RIVER STATION)	T	7	18	176	243,000	248,000
16	SUCKER RIVER	T	12	13	1.86	2,590	5,350
17	TEMPERANCE RIVER	T	12	11	6.80	7,110	7,980

LBS/DAY = KG/DAY * 2.21
CFS = M3/SEC * 35.3
11/06/75

UPPER GREAT LAKES LAND SOURCE INPUTS

LAKE BASIN: SUPERIOR
REPORTING AGENCY: MINNESOTA

PARAMETER: CHEMICAL OXYGEN DEMAND
EXP. AS: CHEMICAL OXYGEN DEMAND
LOWER LIMIT OF DETECTION: (5.0 - 50) MG/L

PERIOD OF RECORD
07-01-73 THRU 06-30-75

	INPUT SOURCES	INPUT TYPE	NO. OF SAMPLES	MEAN CONCENTRATION MG/L	MEAN FLOW (M3/SEC)	MEAN LOADING (KG/DAY)	STANDARD DEVIATION FOR LOADING (KG/DAY)
1	GRAND MARAIS WWTP	M	NS				
2	SILVER BAY WWTP	M	NS				
3	TACONITE HARBOR WWTP	M	NS				
4	TWO HARBORS WWTP	M	NS				
1	BAPTISM RIVER	T	6	47	14.6	46,500	57,800
2	BEAVER RIVER	T	6	39	10.1	25,300	38,600
3	BRULE RIVER	T	6	48	9.61	31,600	22,000
4	CASCADE RIVER	T	6	45	5.96	22,100	18,900
5	CROSS RIVER	T	6	60	3.82	18,300	25,500
6	FRENCH RIVER	T	6	35	2.23	5,450	7,320
7	GOOSEBERRY RIVER	T	6	44	5.66	18,600	36,100
8	KNIFE RIVER	T	6	43	6.48	18,500	33,600
9	LESTER RIVER	T	6	56	5.44	14,500	22,000
10	MANITOU RIVER	T	6	40	7.13	18,800	29,400
11	NEMADJI RIVER	T	6	44	9.26	32,800	53,600
12	PIGEON RIVER	T	6	41	36.8	112,000	96,000
13	POPLAR RIVER	T	6	40	9.62	38,800	62,100
14	SPLIT ROCK RIVER	T	6	44	3.06	9,230	17,200
15	ST. LOUIS BAY (RIVER STATION)	T	5	48	151	584,000	1,080,000
16	SUCKER RIVER	T	6	41	3.23	8,890	16,300
17	TEMPERANCE RIVER	T	6	33	7.72	16,800	20,400
		T	NA	46			

LBS/DAY = KG/DAY * 2.21
CFS = M3/SEC * 35.3
11/06/75

UPPER GREAT LAKES LAND SOURCE INPUTS

LAKE BASIN: SUPERIOR
REPORTING AGENCY: MINNESOTA

PARAMETER: CHLORIDE
EXP. AS: CHLORIDE
LOWER LIMIT OF DETECTION: 1.0 MG/L

PERIOD OF RECORD
07-01-73 THRU 06-30-75

	INPUT SOURCES	INPUT TYPE	NO. OF SAMPLES	MEAN CONCENTRATION MG/L	MEAN FLOW (M3/SEC)	MEAN LOADING (KG/DAY)	STANDARD DEVIATION FOR LOADING (KG/DAY)
1	GRAND MARAIS WWTP	M	21	43	.006	23.8	7.76
2	SILVER BAY WWTP	M	21	27	.025	54.7	36.2
3	TACONITE HARBOR WWTP	M	21	32	.000	0.04	0.01
4	TWO HARBORS WWTP	M	21	24	.075	153	60.9
1	BAPTISM RIVER	T	31	5	8.86	5,710	15,300
2	BEAVER RIVER	T	31	3	5.63	1,370	2,090
3	BRULE RIVER	T	31	2	8.73	1,750	2,180
4	CASCADE RIVER	T	31	2	3.96	909	1,510
5	CROSS RIVER	T	31	2	3.38	733	1,070
6	FRENCH RIVER	T	31	4	.884	244	409
7	GOOSEBERRY RIVER	T	31	3	2.74	571	930
8	KNIFE RIVER	T	31	6	2.96	982	1,280
9	LESTER RIVER	T	30	6	2.16	922	1,790
10	MANITOU RIVER	T	31	3	4.42	1,030	1,630
11	NEMADJI RIVER	T	30	4	4.50	1,730	3,220
12	PIGEON RIVER	T	31	3	25.9	5,670	6,010
13	POPLAR RIVER	T	31	3	5.60	1,660	2,450
14	SPLIT ROCK RIVER	T	31	3	2.34	612	1,060
15	ST. LOUIS BAY (RIVER STATION)	T	24	12	110	103,000	126,000
16	SUCKER RIVER	T	31	3	1.64	452	1,010
17	TEMPERANCE RIVER	T	30	3	5.29	1,170	1,320
18							

LBS/DAY = KG/DAY * 2.21
CFS = M3/SEC * 35.3
11/06/75

UPPER GREAT LAKES LAND SOURCE INPUTS

LAKE BASIN: SUPERIOR
REPORTING AGENCY: MINNESOTA

PARAMETER: CHROMIUM
EXP. AS: CHROMIUM
PARAMETER TYPE: TOTAL
LOWER LIMIT OF DETECTION: 0.002 MG/L

PERIOD OF RECORD
07-01-73 THRU 06-30-75

	INPUT SOURCES	INPUT TYPE	NO. OF SAMPLES	MEAN CONCENTRATION MG/L	MEAN FLOW (M3/SEC)	MEAN LOADING (KG/DAY)	STANDARD DEVIATION FOR LOADING (KG/DAY)
1	GRAND MARAIS WWTP	M	3	.003	.007	0.00	0.00
2	SILVER BAY WWTP	M	3	.006	.016	0.01	0.01
3	TACONITE HARBOR WWTP	M	3	.002	.000	0.00	0.00
4	TWO HARBORS WWTP	M	3	.004	.074	0.03	0.01
1	BAPTISM RIVER	T	6	.002	14.6	1.16	1.38
2	BEAVER RIVER	T	6	.003	10.1	0.85	0.94
3	BRULE RIVER	T	6	.003	9.61	2.81	2.79
4	CASCADE RIVER	T	6	.003	5.96	1.51	2.36
5	CROSS RIVER	T	6	.002	3.82	0.27	0.27
6	FRENCH RIVER	T	6	.002	2.23	0.39	0.69
7	GOOSEBERRY RIVER	T	6	.018	5.66	15.9	24.6
8	KNIFE RIVER	T	6	.002	6.48	1.99	4.42
9	LESTER RIVER	T	6	.005	5.44	3.97	6.61
10	MANITOU RIVER	T	6	.002	7.13	0.75	1.19
11	NEMADJI RIVER	T	6	.011	9.26	21.3	41.9
12	PIGEON RIVER	T	6	.010	36.8	31.6	61.7
13	POPLAR RIVER	T	6	.003	9.62	1.69	2.41
14	SPLIT ROCK RIVER	T	6	.002	3.06	0.72	1.52
15	ST. LOUIS BAY (RIVER STATION)	T	5	.003	151	32.1	53.9
16	SUCKER RIVER	T	6	.003	3.23	0.51	0.86
17	TEMPERANCE RIVER	T	6	.002	7.72	0.77	0.75

LBS/DAY = KG/DAY * 2.21
CFS = M3/SEC * 35.3
11/06/75

UPPER GREAT LAKES LAND SOURCE INPUTS

LAKE BASIN: SUPERIOR
REPORTING AGENCY: MINNESOTA

PARAMETER: COLIFORM, FECAL
EXP. AS: MPN,CONF., TUBE CONFIG.
LOWER LIMIT OF DETECTION: 2 MPN/100ML

PERIOD OF RECORD
07-01-73 THRU 06-30-75

	INPUT SOURCES	INPUT TYPE	NO. OF SAMPLES	MEAN CONCENTRATION #/100ML	MEAN FLOW (M3/SEC)	MEAN LOADING (KG/DAY)	STANDARD DEVIATION FOR LOADING (KG/DAY)
1	GRAND MARAIS WWTP	M	NS				
2	SILVER BAY WWTP	M	NS				
3	TACONITE HARBOR WWTP	M					
4	TWO HARBORS WWTP	M	NS				
1	BAPTISM RIVER	T	31	29	8.86	NA	
2	BEAVER RIVER	T	31	68	5.63	NA	
3	BRULE RIVER	T	31	25	8.73	NA	
4	CASCADE RIVER	T	31	34	3.96	NA	
5	CROSS RIVER	T	30	10	3.47	NA	
6	FRENCH RIVER	T	31	63	.884	NA	
7	GOOSEBERRY RIVER	T	31	22	2.74	NA	
8	KNIFE RIVER	T	31	140	2.96	NA	
9	LESTER RIVER	T	31	152	2.18	NA	
10	MANITOU RIVER	T	31	27	4.42	NA	
11	PEMADJI RIVER	T	31	188	4.45	NA	
12	PIGEON RIVER	T	31	56	25.9	NA	
13	POPLAR RIVER	T	31	17	5.60	NA	
14	SPLIT ROCK RIVER	T	31	22	2.34	NA	
15	ST. LOUIS BAY (RIVER STATION)	T	25	192	112	NA	
16	SUCKER RIVER	T	31	26	1.64	NA	
17	TEMPERANCE RIVER	T	31	18	5.13	NA	

LBS/DAY = KG/DAY * 2.21
CFS = M3/SEC * 35.3
11/06/75

UPPER GREAT LAKES LAND SOURCE INPUTS

LAKE BASIN: SUPERIOR
REPORTING AGENCY: MINNESOTA

PARAMETER: COLIFORM, TOTAL
EXP. AS: MPN,CONF., 35C-TUBE 31506
LOWER LIMIT OF DETECTION: 2 MPN/100ML

PERIOD OF RECORD
07-01-73 THRU 06-30-75

	INPUT SOURCES	INPUT TYPE	NO. OF SAMPLES	MEAN CONCENTRATION #/100ML	MEAN FLOW (M3/SEC)	MEAN LOADING (KG/DAY)	STANDARD DEVIATION FOR LOADING (KG/DAY)
1	GRAND MARAIS MWTP	M	NS				
2	SILVER BAY MWTP	M	NS				
3	TACONITE HARBOR MWTP	M					
4	TWO HARBORS MWTP	M	NS				
1	BAPTISM RIVER	T	31	395	8.86	NA	
2	BEAVER RIVER	T	31	494	5.63	NA	
3	BRULE RIVER	T	31	174	8.73	NA	
4	CASCADE RIVER	T	31	194	3.96	NA	
5	CROSS RIVER	T	30	104	3.47	NA	
6	FRENCH RIVER	T	31	386	.884	NA	
7	GOOSEBERRY RIVER	T	31	394	2.74	NA	
8	KNIFE RIVER	T	31	1,380	2.96	NA	
9	LESTER RIVER	T	31	1,506	2.18	NA	
10	MANITOU RIVER	T	31	137	4.42	NA	
11	NEMADJI RIVER	T	31	344	4.45	NA	
12	PIGEON RIVER	T	31	326	25.9	NA	
13	POPLAR RIVER	T	31	179	5.60	NA	
14	SPLIT ROCK RIVER	T	31	484	2.34	NA	
15	ST. LOUIS BAY (RIVER STATION)	T	25	1,308	112	NA	
16	SUCKER RIVER	T	31	315	1.64	NA	
17	TEMPERANCE RIVER	T	31	146	5.83	NA	

LBS/DAY = KG/DAY * 2.21
CFS = M3/SEC * 35.3
11/06/75

UPPER GREAT LAKES LAND SOURCE INPUTS

LAKE BASIN: SUPERIOR
REPORTING AGENCY: MINNESOTA

PARAMETER: CONDUCTIVITY
EXP. AS: SPECIFIC CONDUCTANCE
LOWER LIMIT OF DETECTION: 10 UMHOS/CM @ 25C

PERIOD OF RECORD
07-01-73 THRU 06-30-75

	INPUT SOURCES	INPUT TYPE	NO. OF SAMPLES	MEAN CONCENTRATION UMHO/CM	MEAN FLOW (M3/SEC)	MEAN LOADING (KG/DAY)	STANDARD DEVIATION FOR LOADING (KG/DAY)
1	GRAND MARAIS WWTP	M	18	388	.007	NA	
2	SILVER BAY WWTP	M	17	356	.020	NA	
3	TACONITE HARBOR WWTP	M	17	401	.000	NA	
4	TWO HARBORS WWTP	M	17	300	.071	NA	
1	BAPTISM RIVER	T	31	70	8.86	NA	
2	BEAVER RIVER	T	31	86	5.63	NA	
3	BRULE RIVER	T	31	42	8.73	NA	
4	CASCADE RIVER	T	31	55	3.96	NA	
5	CROSS RIVER	T	30	53	3.47	NA	
6	FRENCH RIVER	T	31	121	.884	NA	
7	GOOSEBERRY RIVER	T	31	96	2.74	NA	
8	KNIFE RIVER	T	31	118	2.96	NA	
9	LESTER RIVER	T	31	131	2.18	NA	
10	MANITOU RIVER	T	31	67	4.42	NA	
11	NEMADJI RIVER	T	31	154	4.45	NA	
12	PIGEON RIVER	T	31	70	25.9	NA	
13	POPLAR RIVER	T	31	59	5.60	NA	
14	SPLIT ROCK RIVER	T	31	102	2.34	NA	
15	ST. LOUIS BAY (RIVER STATION)	T	25	148	112	NA	
16	SUCKER RIVER	T	31	123	1.64	NA	
17	TEMPERANCE RIVER	T	31	50	5.83	NA	

LBS/DAY = KG/DAY * 2.21
CFS = M3/SEC * 35.3
11/01/75

UPPER GREAT LAKES LAND SOURCE INPUTS

LAKE BASIN: SUPERIOR
REPORTING AGENCY: MINNESOTA

PARAMETER: COPPER
EXP. AS: COPPER
PARAMETER TYPE: TOTAL
LOWER LIMIT OF DETECTION: 0.01 MG/L

PERIOD OF RECORD
07-01-73 THRU 06-30-75

	INPUT SOURCES	INPUT TYPE	NO. OF SAMPLES	MEAN CONCENTRATION MG/L	MEAN FLOW (M3/SEC)	MEAN LOADING (KG/DAY)	STANDARD DEVIATION FOR LOADING (KG/DAY)
1	GRAND MARAIS WWTP	M	6	0.07	.006	0.04	0.02
2	SILVER BAY WWTP	M	6	0.06	.018	0.09	0.08
3	TACONITE HARBOR WWTP	M	6	0.03	.000	0.00	0.00
4	TWO HARBORS WWTP	M	6	0.04	.077	0.30	0.17
1	BAPTISM RIVER	T	26	0.01	9.79	4.32	5.83
2	BEAVER RIVER	T	25	0.01	6.64	3.63	5.80
3	BRULE RIVER	T	27	0.01	9.48	4.81	6.26
4	CASCADE RIVER	T	27	0.01	4.15	1.98	2.17
5	CROSS RIVER	T	26	0.01	3.49	1.53	1.55
6	FRENCH RIVER	T	26	0.01	1.00	0.47	0.69
7	GOOSEBERRY RIVER	T	26	0.01	2.84	1.64	2.99
8	KNIFE RIVER	T	26	0.01	3.29	3.64	11.0
9	LESTER RIVER	T	25	0.01	2.57	2.06	4.61
10	MANITOU RIVER	T	26	0.01	4.84	2.53	3.34
11	NEMADJI RIVER	T	25	0.04	5.16	11.3	29.7
12	PIGEON RIVER	T	27	0.01	28.4	17.8	20.5
13	POPLAR RIVER	T	27	0.01	5.91	2.68	3.41
14	SPLIT ROCK RIVER	T	26	0.01	2.66	1.17	1.79
15	ST. LOUIS BAY (RIVER STATION)	T	22	0.02	121	291	782
16	SUCKER RIVER	T	26	0.01	1.79	1.00	1.74
17	TEMPERANCE RIVER	T	26	0.01	6.34	3.03	3.03

LBS/DAY = KG/DAY * 2.21
CFS = M3/SEC * 35.3
11/06/75

UPPER GREAT LAKES LAND SOURCE INPUTS

LAKE BASIN: SUPERIOR
REPORTING AGENCY: MINNESOTA

PARAMETER: CYANIDE
EXP. AS: CYANIDE
PARAMETER TYPE: TOTAL
LOWER LIMIT OF DETECTION: 0.005 MG/L

PERIOD OF RECORD
07-01-73 THRU 06-30-75

	INPUT SOURCES	INPUT TYPE	NO. OF SAMPLES	MEAN CONCENTRATION MG/L	MEAN FLOW (M3/SEC)	MEAN LOADING (KG/DAY)	STANDARD DEVIATION FOR LOADING (KG/DAY)
1	GRAND MARAIS WWTP	M	6	.006	.007	0.00	0.00
2	SILVER BAY WWTP	M	6	.020	.016	0.02	0.02
3	TACONITE HARBOR WWTP	M	6	.023	.000	0.00	0.00
4	TWO HARBORS WWTP	M	6	.655	.083	3.71	9.02
1	BAPTISM RIVER	T	6	ND	14.6	ND	
2	BEAVER RIVER	T	6	ND	10.1	ND	
3	BRULE RIVER	T	6	ND	9.61	ND	
4	CASCADE RIVER	T	6	ND	5.96	ND	
5	CROSS RIVER	T	6	ND	3.82	ND	
6	FRENCH RIVER	T	6	ND	2.23	ND	
7	GOOSEBERRY RIVER	T	6	ND	5.66	ND	
8	KNIFE RIVER	T	6	ND	6.48	ND	
9	LESTER RIVER	T	6	ND	5.44	ND	
10	MANITOU RIVER	T	6	ND	7.13	ND	
11	NEMADJI RIVER	T	6	.012	9.26	7.82	15.2
12	PIGEON RIVER	T	6	.005	36.8	8.92	6.64
13	POPLAR RIVER	T	6	.011	9.62	3.18	3.41
14	SPLIT ROCK RIVER	T	6	ND	3.06	ND	
15	ST. LOUIS BAY (RIVER STATION)	T	5	.035	151	35.0	52.2
16	SUCKER RIVER	T	6	ND	3.23	ND	
17	TEMPERANCE RIVER	T	6	ND	7.72	ND	

LBS/DAY = KG/DAY * 2.21
CFS = M3/SEC * 35.3
11/06/75

UPPER GREAT LAKES LAND SOURCE INPUTS

LAKE BASIN: SUPERIOR
REPORTING AGENCY: MINNESOTA

PARAMETER: DISSOLVED OXYGEN
EXP. AS: DISSOLVED OXYGEN
LOWER LIMIT OF DETECTION: 0.0 MG/L

PERIOD OF RECORD
07-01-73 THRU 06-30-75

	INPUT SOURCES	INPUT TYPE	NO. OF SAMPLES	MEAN CONCENTRATION MG/L	MEAN FLOW (M3/SEC)	MEAN LOADING (KG/DAY)	STANDARD DEVIATION FOR LOADING (KG/DAY)
1	GRAND MARAIS WWTP	M	3	9.2	.006	NA	
2	SILVER BAY WWTP	M	3	6.7	.020	NA	
3	TACONITE HARBOR WWTP	M	3	10.3	.000	NA	
4	TWO HARBORS WWTP	M	3	9.2	.080	NA	
1	BAPTISM RIVER	T	31	12.4	8.86	NA	
2	BEAVER RIVER	T	31	11.9	5.63	NA	
3	BRULE RIVER	T	31	12.1	8.73	NA	
4	CASCADE RIVER	T	30	12.5	4.07	NA	
5	CROSS RIVER	T	30	12.2	3.47	NA	
6	FRENCH RIVER	T	31	12.2	.884	NA	
7	GOOSEBERRY RIVER	T	31	12.1	2.74	NA	
8	KNIFE RIVER	T	31	12.0	2.96	NA	
9	LESTER RIVER	T	31	12.0	2.18	NA	
10	MANITOU RIVER	T	31	12.3	4.42	NA	
11	NEMADJI RIVER	T	30	11.8	4.56	NA	
12	PIGEON RIVER	T	31	12.0	25.9	NA	
13	POPLAR RIVER	T	31	12.4	5.60	NA	
14	SPLIT ROCK RIVER	T	31	11.9	2.34	NA	
15	ST. LOUIS BAY (RIVER STATION)	T	25	7.0	112	NA	
16	SUCKER RIVER	T	31	12.0	1.64	NA	
17	TEMPERANCE RIVER	T	31	12.2	5.83	NA	

LBS/DAY * KG/DAY * 2.21
CFS * M3/SEC * 35.3
11/06/75

UPPER GREAT LAKES LAND SOURCE INPUTS

LAKE BASIN: SUPERIOR
REPORTING AGENCY: MINNESOTA

PARAMETER: FLUORIDE
EXP. AS: FLUORIDE
PARAMETER TYPE: DISSOLVED
LOWER LIMIT OF DETECTION: 0.1 MG/L

PERIOD OF RECORD
07-01-73 THRU 06-30-75

	INPUT SOURCES	INPUT TYPE	NO. OF SAMPLES	MEAN CONCENTRATION MG/L	MEAN FLOW (M3/SEC)	MEAN LOADING (KG/DAY)	STANDARD DEVIATION FOR LOADING (KG/DAY)
1	GRAND MARAIS WWTP	M	20	0.7	.006	0.39	0.17
2	SILVER BAY WWTP	M	18	0.7	.022	1.30	0.97
3	TACONITE HARBOR WWTP	M	19	0.1	.000	0.00	0.00
4	TWO HARBORS WWTP	M	19	0.9	.074	5.76	2.59
1	BAPTISM RIVER	T	30	0.2	8.80	102	126
2	BEAVER RIVER	T	30	0.2	5.70	99.7	248
3	BOULE RIVER	T	31	0.1	8.73	102	113
4	CASCADE RIVER	T	31	0.2	3.96	59.7	95.0
5	CROSS RIVER	T	28	0.2	3.35	52.4	56.8
6	FRENCH RIVER	T	28	0.2	.914	6.98	8.91
7	GOOSEBERRY RIVER	T	28	0.1	2.55	18.1	30.5
8	KNIFE RIVER	T	28	0.1	3.05	19.0	32.0
9	LESTER RIVER	T	30	0.2	2.25	17.1	20.7
10	MANITOU RIVER	T	30	0.2	4.52	51.2	54.1
11	NEMADJI RIVER	T	30	0.1	4.56	27.7	29.0
12	PIGEON RIVER	T	31	0.1	25.9	195	222
13	POPLAR RIVER	T	29	0.2	5.72	74.7	82.1
14	SPLIT ROCK RIVER	T	29	0.1	2.38	23.2	41.2
15	ST. LOUIS BAY (RIVER STATION)	T	25	0.2	112	1,480	2,190
16	SUCKER RIVER	T	29	0.2	1.66	18.0	36.2
17	TEMPERANCE RIVER	T	30	0.2	5.84	63.6	58.3

LBS/DAY * KG/DAY * 2.21
CFS * M3/SEC * 35.3
11/06/75

UPPER GREAT LAKES LAND SOURCE INPUTS

LAKE BASIN: SUPERIOR
REPORTING AGENCY: MINNESOTA

PARAMETER: IRON
EXP. AS: IRON
PARAMETER TYPE: TOTAL
LOWER LIMIT OF DETECTION: 0.01 MG/L

PERIOD OF RECORD
07-01-73 THRU 06-30-75

	INPUT SOURCES	INPUT TYPE	NO. OF SAMPLES	MEAN CONCENTRATION MG/L	MEAN FLOW (M3/SEC)	MEAN LOADING (KG/DAY)	STANDARD DEVIATION FOR LOADING (KG/DAY)
1	GRAND MARAIS WWTP	M	6	1.54	.006	0.88	0.48
2	SILVER BAY WWTP	M	6	0.97	.018	1.50	1.06
3	TACONITE HARBOR WWTP	M	6	1.79	.000	0.00	0.00
4	TWO HARBORS WWTP	M	6	0.72	.077	4.99	2.25
1	BAPTISM RIVER	T	30	0.42	9.08	490	892
2	BEAVER RIVER	T	30	0.89	5.79	591	1,270
3	BRULE RIVER	T	31	0.51	8.73	476	757
4	CASCADE RIVER	T	31	0.50	3.96	261	547
5	CROSS RIVER	T	31	0.45	3.38	150	221
6	FRENCH RIVER	T	30	0.50	.906	56.4	114
7	GOOSEBERRY RIVER	T	30	1.24	2.82	826	2,660
8	KNIFE RIVER	T	30	0.96	3.04	427	956
9	LESTER RIVER	T	30	0.82	2.23	397	1,310
10	MANITOU RIVER	T	31	0.39	4.42	204	416
11	NEMADJI RIVER	T	31	3.18	4.45	2,760	7,500
12	PIGEON RIVER	T	31	1.39	25.9	4,890	10,800
13	POPLAR RIVER	T	31	0.47	5.60	338	734
14	SPLIT ROCK RIVER	T	31	0.86	2.34	258	503
15	ST. LOUIS BAY (RIVER STATION)	T	25	1.05	112	11,600	16,400
16	SUCKER RIVER	T	30	0.55	1.68	123	252
17	TEMPERANCE RIVER	T	31	0.40	5.83	202	269

LBS/DAY = KG/DAY * 2.21
CFS = M3/SEC * 35.3
11/06/75

UPPER GREAT LAKES LAND SOURCE INPUTS

LAKE BASIN: SUPERIOR
REPORTING AGENCY: MINNESOTA

PARAMETER: LEAD
EXP. AS: LEAD
PARAMETER TYPE: TOTAL
LOWER LIMIT OF DETECTION: 0.01 MG/L

PERIOD OF RECORD
07-01-73 THRU 06-30-75

	INPUT SOURCES	INPUT TYPE	NO. OF SAMPLES	MEAN CONCENTRATION MG/L	MEAN FLOW (M3/SEC)	MEAN LOADING (KG/DAY)	STANDARD DEVIATION FOR LOADING (KG/DAY)
1	GRAND MARAIS WWTP	M	6	0.04	.006	0.02	0.02
2	SILVER BAY WWTP	M	6	0.01	.018	0.02	0.01
3	TACONITE HARBOR WWTP	M	6	0.02	.000	0.00	0.00
4	TWO HARBORS WWTP	M	6	0.02	.077	0.12	0.07
1	BAPTISM RIVER	T	25	0.01	10.1	5.23	8.78
2	BEAVER RIVER	T	25	0.01	6.64	3.58	5.88
3	BRULE RIVER	T	27	0.01	9.48	4.25	4.06
4	CASCADE RIVER	T	27	ND	4.15	ND	
5	CROSS RIVER	T	26	ND	3.49	ND	
6	FRENCH RIVER	T	26	0.01	1.00	0.59	1.03
7	GOOSEBERRY RIVER	T	26	0.01	2.84	2.15	5.45
8	KNIFE RIVER	T	26	0.01	3.29	2.04	5.24
9	LESTER RIVER	T	25	ND	2.57	ND	
10	MANITOU RIVER	T	26	0.01	4.84	2.23	2.90
11	NEMADJI RIVER	T	25	0.01	5.16	7.54	19.1
12	PIGEON RIVER	T	27	0.01	28.4	19.8	30.0
13	POPLAR RIVER	T	27	0.01	5.91	3.12	4.25
14	SPLIT ROCK RIVER	T	26	0.01	2.66	1.33	2.10
15	ST. LOUIS BAY (RIVER STATION)	T	22	0.01	121	85.7	92.7
16	SUCKER RIVER	T	26	0.01	1.79	0.80	1.35
17	TEMPERANCE RIVER	T	26	0.01	6.34	4.27	8.40

LBS/DAY = KG/DAY * 2.21
CFS = M3/SEC * 35.3
11/06/75

UPPER GREAT LAKES LAND SOURCE INPUTS

LAKE BASIN: SUPERIOR
REPORTING AGENCY: MINNESOTA

PARAMETER: MAGNESIUM
EXP. AS: MG/L AS CALCIUM CARBONATE
PARAMETER TYPE: DISSOLVED
LOWER LIMIT OF DETECTION: (1-10) MG/L

PERIOD OF RECORD
07-01-73 THRU 06-30-75

	INPUT SOURCES	INPUT TYPE	NO. OF SAMPLES	MEAN CONCENTRATION MG/L	MEAN FLOW (M3/SEC)	MEAN LOADING (KG/DAY)	STANDARD DEVIATION FOR LOADING (KG/DAY)
1	GRAND MARAIS WWTP	M	NS				
2	SILVER BAY WWTP	M	NS				
3	TACONITE HARBOR WWTP	M	NS				
4	TWO HARBORS WWTP	M	NS				
1	BAPTISM RIVER	T	6	8	14.6	8,300	11,500
2	BEAVER RIVER	T	6	9	10.1	6,770	10,600
3	BRULE RIVER	T	6	7	9.61	4,400	4,130
4	CASCADE RIVER	T	6	8	5.96	3,820	3,470
5	CROSS RIVER	T	6	10	3.82	3,480	3,740
6	FRENCH RIVER	T	6	28	2.23	2,440	2,680
7	GOOSEBERRY RIVER	T	6	15	5.66	4,210	6,490
8	KNIFE RIVER	T	5	17	7.54	6,170	10,300
9	LESTER RIVER	T	6	25	5.44	5,470	7,340
10	MANITOU RIVER	T	6	10	7.13	5,130	9,300
11	NEMADJI RIVER	T	6	29	9.26	15,400	18,400
12	PIGEON RIVER	T	6	11	36.8	30,600	22,800
13	POPLAR RIVER	T	6	11	9.62	8,110	9,430
14	SPLIT ROCK RIVER	T	6	14	3.06	2,120	3,430
15	ST. LOUIS BAY (RIVER STATION)	T	5	18	151	292,000	524,000
16	SUCKER RIVER	T	6	22	3.23	2,820	3,910
17	TEMPERANCE RIVER	T	6	7	7.72	4,270	4,060

LBS/DAY = KG/DAY * 2.21
CFS = M3/SEC * 35.3
11/06/75

UPPER GREAT LAKES LAND SOURCE INPUTS

LAKE BASIN: SUPERIOR
REPORTING AGENCY: MINNESOTA

PARAMETER: MANGANESE
EXP. AS: MANGANESE
PARAMETER TYPE: TOTAL
LOWER LIMIT OF DETECTION: (0.005-0.01) MG/L

PERIOD OF RECORD
07-01-73 THRU 06-30-75

	INPUT SOURCES	INPUT TYPE	NO. OF SAMPLES	MEAN CONCENTRATION MG/L	MEAN FLOW (M3/SEC)	MEAN LOADING (KG/DAY)	STANDARD DEVIATION FOR LOADING (KG/DAY)
1	GRAND MARAIS WWTP	M	6	0.20	.006	0.11	0.07
2	SILVER BAY WWTP	M	6	0.08	.018	0.13	0.11
3	TACONITE HARBOR WWTP	M	6	0.33	.000	0.00	0.00
4	TWO HARBORS WWTP	M	6	0.07	.077	0.48	0.35
1	BAPTISM RIVER	T	31	0.03	8.86	24.6	59.7
2	BEAVER RIVER	T	30	0.02	5.79	12.4	30.6
3	BRULE RIVER	T	31	0.02	8.73	17.6	35.6
4	CASCADE RIVER	T	31	0.03	3.96	11.4	22.6
5	CROSS RIVER	T	31	0.02	3.38	6.49	10.9
6	FRENCH RIVER	T	30	0.02	.906	0.92	1.37
7	GOOSEBERRY RIVER	T	30	0.03	2.82	11.6	33.9
8	KNIFE RIVER	T	30	0.03	3.04	6.85	13.3
9	LESTER RIVER	T	30	0.04	2.23	8.42	22.6
10	MANITOU RIVER	T	31	0.03	4.42	14.7	36.7
11	NEMADJI RIVER	T	31	0.07	4.45	34.0	58.8
12	PIGEON RIVER	T	31	0.09	25.9	257	894
13	POPLAR RIVER	T	31	0.02	5.60	14.0	27.0
14	SPLIT ROCK RIVER	T	31	0.04	2.34	16.1	40.8
15	ST. LOUIS BAY (RIVER STATION)	T	25	0.11	112	718	715
16	SUCKER RIVER	T	30	0.03	1.68	2.58	5.61
17	TEMPERANCE RIVER	T	31	0.03	5.83	25.8	44.6

LBS/DAY = KG/DAY * 2.21
CFS = M3/SEC * 35.3
11/06/75

UPPER GREAT LAKES LAND SOURCE INPUTS

LAKE BASIN: SUPERIOR
REPORTING AGENCY: MINNESOTA

PARAMETER: MERCURY
EXP. AS: MERCURY
PARAMETER TYPE: TOTAL
LOWER LIMIT OF DETECTION: 0.0001 MG/L

PERIOD OF RECORD
07-01-73 THRU 06-30-75

	INPUT SOURCES	INPUT TYPE	NO. OF SAMPLES	MEAN CONCENTRATION MG/L	MEAN FLOW (M3/SEC)	MEAN LOADING (KG/DAY)	STANDARD DEVIATION FOR LOADING (KG/DAY)
1	GRAND MARAIS WWTP	M	6	.0007	.006	0.00	0.00
2	SILVER BAY WWTP	M	6	.0009	.018	0.00	0.00
3	TACONITE HARBOR WWTP	M	6	.0006	.000	0.00	0.00
4	TWO HARBORS WWTP	M	6	.0004	.077	0.00	0.00
1	BAPTISM RIVER	T	8	.0002	12.5	0.29	0.49
2	BEAVER RIVER	T	8	.0002	8.14	0.18	0.40
3	BRULE RIVER	T	9	.0003	8.75	0.26	0.37
4	CASCADE RIVER	T	9	.0003	5.04	0.14	0.20
5	CROSS RIVER	T	8	.0002	3.69	0.07	0.07
6	FRENCH RIVER	T	9	.0004	1.56	0.10	0.19
7	GOOSEBERRY RIVER	T	10	.0005	4.40	0.21	0.47
8	KNIFE RIVER	T	9	.0006	4.81	0.14	0.23
9	LESTER RIVER	T	9	.0002	4.04	0.03	0.05
10	MANITOU RIVER	T	8	.0002	6.36	0.07	0.07
11	NEMADJI RIVER	T	8	.0005	8.78	0.14	0.11
12	PIGEON RIVER	T	9	.0003	31.0	0.55	0.51
13	POPLAR RIVER	T	8	.0003	8.25	0.20	0.31
14	SPLIT ROCK RIVER	T	9	.0003	2.34	0.06	0.11
15	ST. LOUIS BAY (RIVER STATION)	T	6	.0002	154	2.03	2.02
16	SUCKER RIVER	T	9	.0002	2.51	0.03	0.05
17	TEMPERANCE RIVER	T	8	.0003	6.70	0.26	0.53

LBS/DAY = KG/DAY * 2.21
CFS = M3/SEC * 35.3
11/06/75

UPPER GREAT LAKES LAND SOURCE INPUTS

LAKE BASIN: SUPERIOR
REPORTING AGENCY: MINNESOTA

PARAMETER: NICKEL
EXP. AS: NICKEL
PARAMETER TYPE: TOTAL
LOWER LIMIT OF DETECTION: 0.01 MG/L

PERIOD OF RECORD
07-01-73 THRU 06-30-75

	INPUT SOURCES	INPUT TYPE	NO. OF SAMPLES	MEAN CONCENTRATION MG/L	MEAN FLOW (M3/SEC)	MEAN LOADING (KG/DAY)	STANDARD DEVIATION FOR LOADING (KG/DAY)
1	GRAND MARAIS WWTP	M	6	0.01	.006	0.00	0.00
2	SILVER BAY WWTP	M	6	ND	.018	ND	
3	TACONITE HARBOR WWTP	M	6	ND	.000	ND	
4	TWO HARBORS WWTP	M	6	0.01	.077	0.04	0.01
1	BAPTISM RIVER	T	26	0.01	9.79	6.15	10.9
2	BEAVER RIVER	T	25	0.01	6.64	6.02	17.0
3	BRULE RIVER	T	27	0.01	9.48	4.35	4.07
4	CASCADE RIVER	T	27	ND	4.15	ND	
5	CROSS RIVER	T	26	0.01	3.49	1.65	1.70
6	FRENCH RIVER	T	26	0.01	1.00	0.58	0.89
7	GOOSEBERRY RIVER	T	26	0.01	2.84	1.59	3.40
8	KNIFE RIVER	T	26	0.01	3.29	1.44	2.56
9	LESTER RIVER	T	25	0.01	2.57	1.47	2.08
10	MANITOU RIVER	T	26	0.01	4.84	2.10	2.95
11	NEMADJI RIVER	T	25	0.01	5.16	5.34	9.21
12	PIGEON RIVER	T	27	0.01	28.4	13.1	11.9
13	POPLAR RIVER	T	27	ND	5.91	ND	
14	SPLIT ROCK RIVER	T	26	0.01	2.66	1.53	3.07
15	ST. LOUIS BAY (RIVER STATION)	T	22	0.01	121	62.5	65.1
16	SUCKER RIVER	T	26	0.02	1.79	1.22	2.53
17	TEMPERANCE RIVER	T	26	0.01	6.34	2.81	2.78

LBS/DAY = KG/DAY * 2.21
CFS = M3/SEC * 35.3
11/06/75

UPPER GREAT LAKES LAND SOURCE INPUTS

LAKE BASIN: SUPERIOR
REPORTING AGENCY: MINNESOTA

PARAMETER: NITROGEN, AMMONIA
EXP. AS: NITROGEN
LOWER LIMIT OF DETECTION: 0.05 MG/L

PERIOD OF RECORD
07-01-73 THRU 06-30-75

	INPUT SOURCES	INPUT TYPE	NO. OF SAMPLES	MEAN CONCENTRATION MG/L	MEAN FLOW (M3/SEC)	MEAN LOADING (KG/DAY)	STANDARD DEVIATION FOR LOADING (KG/DAY)
1	GRAND MARAIS WWTP	M	15	10.3	.007	6.11	4.72
2	SILVER BAY WWTP	M	15	9.8	.020	14.2	13.1
3	TACONITE HARBOR WWTP	M	15	3.5	.000	0.00	0.01
4	TWO HARBORS WWTP	M	14	7.8	.064	44.2	26.2
1	BAPTISM RIVER	T	29	0.09	9.32	57.5	124
2	BEAVER RIVER	T	30	0.12	5.74	27.9	40.5
3	BRULE RIVER	T	30	0.13	8.85	79.7	196
4	CASCADE RIVER	T	30	0.10	4.00	24.5	35.2
5	CROSS RIVER	T	29	0.09	3.48	19.7	27.3
6	FRENCH RIVER	T	30	0.11	.908	6.77	13.4
7	GOOSEBERRY RIVER	T	30	0.10	2.80	15.2	27.2
8	KNIFE RIVER	T	30	0.09	3.00	15.5	23.8
9	LESTER RIVER	T	30	0.10	2.23	15.8	35.3
10	MANITOU RIVER	T	30	0.09	4.51	27.9	61.6
11	NEMADJI RIVER	T	30	0.11	4.56	37.3	55.2
12	PIGEON RIVER	T	30	0.11	26.4	159	230
13	POPLAR RIVER	T	30	0.16	5.74	40.4	45.1
14	SPLIT ROCK RIVER	T	30	0.09	2.39	18.4	54.0
15	ST. LOUIS BAY (RIVER STATION)	T	25	0.26	112	1,590	1,020
16	SUCKER RIVER	T	30	0.11	1.66	10.8	16.5
17	TEMPERANCE RIVER	T	30	0.10	5.97	32.2	34.2

LBS/DAY = KG/DAY * 2.21
CFS = M3/SEC * 35.3
11/06/75

UPPER GREAT LAKES LAND SOURCE INPUTS

LAKE BASIN: SUPERIOR
REPORTING AGENCY: MINNESOTA

PARAMETER: NITROGEN, ORGANIC
EXP. AS: NITROGEN
LOWER LIMIT OF DETECTION: 0.05 MG/L

PERIOD OF RECORD
07-01-73 THRU 06-30-75

	INPUT SOURCES	INPUT TYPE	NO. OF SAMPLES	MEAN CONCENTRATION MG/L	MEAN FLOW (M3/SEC)	MEAN LOADING (KG/DAY)	STANDARD DEVIATION FOR LOADING (KG/DAY)
1	GRAND MARAIS WWTP	M	1[illegible]	7.29	.007	4.21	1.94
2	SILVER BAY WWTP	M	12	3.72	.019	6.20	3.59
3	TACONITE HARBOR WWTP	M	12	3.01	.000	0.00	0.00
4	TWO HARBORS WWTP	M	12	3.67	.069	21.4	13.1
1	BAPTISM RIVER	T	30	0.66	9.03	578	870
2	BEAVER RIVER	T	30	0.64	5.74	299	416
3	BRULE RIVER	T	30	0.51	8.85	420	467
4	CASCADE RIVER	T	30	0.57	4.00	221	262
5	CROSS RIVER	T	29	0.53	3.48	193	223
6	FRENCH RIVER	T	30	0.56	.908	47.0	71.8
7	GOOSEBERRY RIVER	T	30	0.58	2.80	159	261
8	KNIFE RIVER	T	30	0.55	3.00	151	237
9	LESTER RIVER	T	30	0.67	2.23	140	270
10	MANITOU RIVER	T	30	0.63	4.51	262	394
11	NEMADJI RIVER	T	30	0.70	4.56	382	626
12	PIGEON RIVER	T	30	0.63	25.4	1,500	1,470
13	POPLAR RIVER	T	30	0.54	5.74	311	490
14	SPLIT ROCK RIVER	T	30	0.60	2.39	124	202
15	ST. LOUIS BAY (RIVER STATION)	T	25	0.87	112	8,370	10,500
16	SUCKER RIVER	T	30	0.59	1.66	85.2	140
17	TEMPERANCE RIVER	T	30	0.56	5.37	321	384

LBS/DAY = KG/DAY * 2.21
CFS = M3/SEC * 35.3
11/06/75

UPPER GREAT LAKES LAND SOURCE INPUTS

LAKE BASIN: SUPERIOR
REPORTING AGENCY: MINNESOTA

PARAMETER: NITROGEN, NITRATE
EXP. AS: NITROGEN
LOWER LIMIT OF DETECTION:

PERIOD OF RECORD
07-01-73 THRU 06-30-75

	INPUT SOURCES	INPUT TYPE	NO. OF SAMPLES	MEAN CONCENTRATION MG/L	MEAN FLOW (M3/SEC)	MEAN LOADING (KG/DAY)	STANDARD DEVIATION FOR LOADING (KG/DAY)
1	GRAND MARAIS WWTP	M	12	1.9	.007	0.95	1.95
2	SILVER BAY WWTP	M	12	3.7	.019	6.08	6.89
3	TACONITE HARBOR WWTP	M	12	6.2	.000	0.01	0.01
4	TWO HARBORS WWTP	M	12	3.8	.064	21.8	34.1
1	BAPTISM RIVER	T	30	0.	9.03	434	825
2	BEAVER RIVER	T	30	0.	5.74	95.1	174
3	BRULE RIVER	T	30	0.	8.89	136	169
4	CASCADE RIVER	T	30	0.	4.00	103	137
5	CROSS RIVER	T	29	0.	3.48	86.8	127
6	FRENCH RIVER	T	30	0.	.408	12.3	23.8
7	GOOSEBERRY RIVER	T	30	0.	2.80	36.0	88.0
8	KNIFE RIVER	T	30	0.	3.00	61.8	85.2
9	LESTER RIVER	T	30	0.	2.23	41.9	145
10	MANITOU RIVER	T	30	0.	4.51	129	264
11	NEMADJI RIVER	T	30	0.	6.56	59.5	130
12	PIGEON RIVER	T	30	0.	26.4	611	531
13	POPLAR RIVER	T	30	0.	5.74	228	475
14	SPLIT ROCK RIVER	T	30	0.	2.39	55.7	133
15	ST. LOUIS BAY (RIVER STATION)	T	25	0.	112	2,170	3,590
16	SUCKER RIVER	T	30	0.	1.66	28.6	57.7
17	TEMPERANCE RIVER	T	30	0.3	5.97	192	280

LBS/DAY = KG/DAY * 2.21
CFS = M3/SEC * 35.3
11/06/75

UPPER GREAT LAKES LAND SOURCE INPUTS

LAKE BASIN: SUPERIOR
REPORTING AGENCY: MINNESOTA

PARAMETER: NITROGEN, NITRITE
EXP. AS: NITROGEN
LOWER LIMIT OF DETECTION: 0.01 MG/L

PERIOD OF RECORD
07-01-73 THRU 06-30-75

	INPUT SOURCES	INPUT TYPE	NO. OF SAMPLES	MEAN CONCENTRATION MG/L	MEAN FLOW (M3/SEC)	MEAN LOADING (KG/DAY)	STANDARD DEVIATION FOR LOADING (KG/DAY)
1	GRAND MARAIS WWTP	M	12	0.19	.007	0.10	0.14
2	SILVER BAY WWTP	M	12	0.53	.019	0.78	0.88
3	TACONITE HARBOR WWTP	M	12	0.00	.000	0.00	0.00
4	TWO HARBORS WWTP	M	12	3.70	.056	14.3	39.2
1	BAPTISM RIVER	T	30	0.03	9.03	22.6	41.3
2	BEAVER RIVER	T	30	0.03	5.74	11.7	21.9
3	BRULE RIVER	T	30	0.03	8.85	16.2	21.6
4	CASCADE RIVER	T	30	0.03	4.30	7.77	10.8
5	CROSS RIVER	T	29	0.03	3.48	5.81	7.20
6	FRENCH RIVER	T	30	0.03	.808	1.48	2.68
7	GOOSEBERRY RIVER	T	30	0.03	2.80	5.41	12.8
8	KNIFE RIVER	T	30	0.03	5.00	8.13	18.7
9	LESTER RIVER	T	30	0.03	2.73	5.51	12.1
10	MANITOU RIVER	T	30	0.03	4.54	8.89	16.3
11	NEMADJI RIVER	T	30	0.03	9.56	17.7	32.8
12	PIGEON RIVER	T	30	0.03	27.4	56.7	70.2
13	POPLAR RIVER	T	30	0.03	5.74	11.5	19.7
14	SPLIT ROCK RIVER	T	30	0.03	2.14	5.82	12.5
15	ST. LOUIS BAY (RIVER STATION)	T	25	0.03	112	356	476
16	SUCKER RIVER	T	30	0.03	1.66	4.61	12.0
17	TEMPERANCE RIVER	T	30	0.03	5.27	10.0	13.3

LBS/DAY = KG/DAY * 2.21
CFS = M3/SEC * 35.3
11/06/75

UPPER GREAT LAKES LAND SOURCE INPUTS

LAKE BASIN: SUPERIOR
REPORTING AGENCY: MINNESOTA

PARAMETER: NITROGEN, TOTAL
EXP. AS: NITROGEN
PARAMETER TYPE: TOTAL
LOWER LIMIT OF DETECTION: [illegible]

PERIOD OF RECORD
07-01-75 THRU 06-30-79

	INPUT SOURCES	INPUT TYPE	NO. OF SAMPLES	MEAN CONCENTRATION MG/L	MEAN FLOW (M3/SEC)	MEAN LOADING (KG/DAY)	STANDARD DEVIATION FOR LOADING (KG/DAY)
1	GRAND MARAIS WWTP	M	12	19.9	.007	11.4	5.60
2	SILVER BAY WWTP	M	14	17.7	.019	28.8	22.1
3	TACONITE HARBOR WWTP	M	12	11.9	.000	0.01	0.01
4	TWO HARBORS WWTP	M	12	18.9	.059	98.3	57.7
1	BAPTISM RIVER	T	29	1.[illegible]	9.8[illegible]	1,110	1,720
2	BEAVER RIVER	T	30	1.[illegible]	5.76	921	585
3	BRULE RIVER	T	30	0.[illegible]	8.45	629	663
4	CASCADE RIVER	T	30	0.[illegible]	4.00	348	396
5	CROSS RIVER	T	29	0.[illegible]	3.48	299	343
6	FRENCH RIVER	T	30	0.[illegible]	.908	66.9	106
7	GOOSEBERRY RIVER	T	30	0.[illegible]	2.80	209	347
8	KNIFE RIVER	T	30	0.[illegible]	3.00	212	346
9	LESTER RIVER	T	30	0.[illegible]	2.23	200	437
10	MANITOU RIVER	T	30	1.[illegible]	4.51	419	701
11	NEMADJI RIVER	T	30	1.[illegible]	4.56	490	789
12	PIGEON RIVER	T	30	0.[illegible]	26.4	2,070	2,020
13	POPLAR RIVER	T	30	1.[illegible]	5.74	578	972
14	SPLIT ROCK RIVER	T	30	0.[illegible]	2.39	202	377
15	ST. LOUIS BAY (RIVER STATION)	T	25	1.[illegible]	112	12,400	15,200
16	SUCKER RIVER	T	30	0.[illegible]	1.66	128	209
17	TEMPERANCE RIVER	T	30	0.[illegible]	5.97	542	649

LBS/DAY = KG/DAY * 2.21
CFS = M3/SEC * 35.3
11/06/75

[illegible]

LAKE BASIN: SUPERIOR
REPORTING AGENCY: MINNESOTA

PARAMETER: [illegible]
EXP. AS: [illegible]
LOGGED LIMIT [illegible] .5 MG/L

[illegible]

	INPUT SOURCES	INPUT TYPE	[illegible]	[illegible]	[illegible]	[illegible]	STANDARD DEVIATION FOR LOADING (KG/DAY)
1	[illegible]						
2	[illegible]						
3	[illegible]						
4	Taconite Harbor STP	M			[illegible]	[illegible]	
5	[illegible]						
6	[illegible]						
7	[illegible]						
8	[illegible]						
9	[illegible]						
10	[illegible]						
11	[illegible]						
12	[illegible]						
13	[illegible]						
14	[illegible] (RIVER STATION)						
15	[illegible]						
16	[illegible]						
17	Nemadji River	T	6	[illegible]	[illegible]	1,290	

Reproduced from best available copy.

LBS/DAY = KG/DAY * 2.21
CFS = M3/SEC * 35.3
01/14/76

UPPER GREAT LAKES LAND SOURCE INPUTS

LAKE BASIN: SUPERIOR
REPORTING AGENCY: MINNESOTA

PARAMETER: PESTICIDE, DDT
EXP. AS: DDT IN WHOLE WATER SAMPLE
PARAMETER TYPE: TOTAL
LOWER LIMIT OF DETECTION: 0.00001 MG/L

PERIOD OF RECORD
07-01-73 THRU 06-30-75

	INPUT SOURCES	INPUT TYPE	NO. OF SAMPLES	MEAN CONCENTRATION MG/L	MEAN FLOW (M3/SEC)	MEAN LOADING (KG/DAY)	STANDARD DEVIATION FOR LOADING (KG/DAY)
1	GRAND MARAIS WWTP	M	1	ND	.006	ND	
2	SILVER BAY WWTP	M	1	ND	.009	ND	
3	TACONITE HARBOR WWTP	M	1	ND	.000	ND	
4	TWO HARBORS WWTP	M	NS				
1	BAPTISM RIVER	T	5	ND	17.5	ND	
2	BEAVER RIVER	T	5	ND	11.9	ND	
3	BRULE RIVER	T	5	ND	9.18	ND	
4	CASCADE RIVER	T	5	ND	5.82	ND	
5	CROSS RIVER	T	5	ND	4.67	ND	
6	FRENCH RIVER	T	5	ND	2.65	ND	
7	GOOSEBERRY RIVER	T	4	.00003	8.34	0.01	0.01
8	KNIFE RIVER	T	5	.00004	7.73	0.01	0.02
9	LESTER RIVER	T	5	.00004	6.51	0.01	0.02
10	MANITOU RIVER	T	4	ND	3.59	ND	
11	NEMADJI RIVER	T	5	.00004	10.9	0.02	0.01
12	PIGEON RIVER	T	5	ND	86.3	ND	
13	POPLAR RIVER	T	5	ND	11.2	ND	
14	SPLIT ROCK RIVER	T	5	.00004	3.66	0.03	0.01
15	ST. LOUIS BAY (RIVER STATION)	T	4	ND	181	ND	
16	SUCKER RIVER	T	5	.00004	3.82	0.01	0.01
17	TEMPERANCE RIVER	T	5	ND	8.85	ND	

LBS/DAY = KG/DAY * 2.21
CFS = M3/SEC * 35.3
11/06/75

UPPER GREAT LAKES LAND SOURCE INPUTS

LAKE BASIN: SUPERIOR
REPORTING AGENCY: MINNESOTA

PARAMETER: PH
EXP. AS: PH(STANDARD UNITS)
LOWER LIMIT OF DETECTION: 0.1 PH UNITS

PERIOD OF RECORD
07-01-73 THRU 06-30-75

	INPUT SOURCES	INPUT TYPE	NO. OF SAMPLES	MEAN CONCENTRATION SU	MEAN FLOW (M3/SEC)	MEAN LOADING (KG/DAY)	STANDARD DEVIATION FOR LOADING (KG/DAY)
1	GRAND MARAIS WWTP	M	5	7.2	.007	NA	
2	SILVER BAY WWTP	M	6	7.4	.022	NA	
3	TACONITE HARBOR WWTP	M	6	7.8	.000	NA	
4	TWO HARBORS WWTP	M	6	7.2	.088	NA	
1	BAPTISM RIVER	T	31	7.6	8.86	NA	
2	BEAVER RIVER	T	31	7.5	5.63	NA	
3	BRULE RIVER	T	31	7.8	8.73	NA	
4	CASCADE RIVER	T	31	7.9	3.96	NA	
5	CROSS RIVER	T	30	7.[illegible]	3.67	NA	
6	FRENCH RIVER	T	31	7.8	.886	NA	
7	GOOSEBERRY RIVER	T	31	7.6	2.76	NA	
8	KNIFE RIVER	T	31	7.7	2.99	NA	
9	LESTER RIVER	T	31	7.8	2.18	NA	
10	MANITOU RIVER	T	31	7.9	8.62	NA	
11	NEMADJI RIVER	T	31	7.8	8.85	NA	
12	PIGEON RIVER	T	31	7.3	25.9	NA	
13	POPLAR RIVER	T	31	7.6	3.60	NA	
14	SPLIT ROCK RIVER	T	31	7.5	2.36	NA	
15	ST. LOUIS BAY (RIVER STATION)	T	25	7.5	112	NA	
16	SUCKER RIVER	T	31	7.8	1.68	NA	
17	TEMPERANCE RIVER	T	31	7.9	5.83	NA	

LBS/DAY = KG/DAY * 2.21
CFS = M3/SEC * 35.3
11/06/75

UPPER GREAT LAKES LAND SOURCE INPUTS

LAKE BASIN: SUPERIOR
REPORTING AGENCY: MINNESOTA

PARAMETER: PHENOLS
EXP. AS: PHENOLICS, TOT RECOVERABLE
PARAMETER TYPE: TOTAL
LOWER LIMIT OF DETECTION: 0.002 MG/L

PERIOD OF RECORD
07-01-73 THRU 06-30-75

	INPUT SOURCES	INPUT TYPE	NO. OF SAMPLES	MEAN CONCENTRATION MG/L	MEAN FLOW (M3/SEC)	MEAN LOADING (KG/DAY)	STANDARD DEVIATION FOR LOADING (KG/DAY)
1	GRAND MARAIS WWTP	M	14	.095	.007	0.05	0.05
2	SILVER BAY WWTP	M	15	.022	.020	0.04	0.05
3	TACONITE HARBOR WWTP	M	15	.030	.000	0.00	0.00
4	TWO HARBORS WWTP	M	15	.039	.068	0.24	0.29
1	BAPTISM RIVER	T	30	.006	7.69	2.88	6.82
2	BEAVER RIVER	T	31	.006	5.63	1.36	2.14
3	BRULE RIVER	T	31	.008	8.73	1.85	2.12
4	CASCADE RIVER	T	31	.006	3.96	1.45	2.15
5	CROSS RIVER	T	30	.007	3.34	2.00	5.17
6	FRENCH RIVER	T	31	.005	.886	0.68	1.16
7	GOOSEBERRY RIVER	T	31	.005	2.74	1.00	2.13
8	KNIFE RIVER	T	29	.005	3.10	1.07	2.04
9	LESTER RIVER	T	31	.005	4.18	1.57	5.43
10	MANITOU RIVER	T	30	.005	9.39	3.74	10.6
11	NEMADJI RIVER	T	31	.007	9.65	4.07	13.0
12	PIGEON RIVER	T	31	.006	25.9	5.67	6.69
13	POPLAR RIVER	T	31	.003	5.60	1.18	1.69
14	SPLIT ROCK RIVER	T	30	.006	1.98	1.01	3.56
15	ST. LOUIS BAY (RIVER STATION)	T	25	.010	11.	85.5	119
16	SUCKER RIVER	T	31	.006	1.66	0.55	1.24
17	TEMPERANCE RIVER	T	31	.008	5.83	2.56	5.57

LBS/DAY = KG/DAY * 2.21
CFS = M3/SEC * 35.3
11/06/75

UPPER GREAT LAKES LAND SOURCE INPUTS

LAKE BASIN: SUPERIOR
REPORTING AGENCY: MINNESOTA

PARAMETER: PHOSPHORUS
EXP. AS: PHOSPHORUS
PARAMETER TYPE: TOTAL
LOWER LIMIT OF DETECTION: 0.01 MG/L

PERIOD OF RECORD
07-01-73 THRU 06-30-75

	INPUT SOURCES	INPUT TYPE	NO. OF SAMPLES	MEAN CONCENTRATION MG/L	MEAN FLOW (M3/SEC)	MEAN LOADING (KG/DAY)	STANDARD DEVIATION FOR LOADING (KG/DAY)
1	GRAND MARAIS WWTP	M	21	5.9	.006	3.44	3.08
2	SILVER BAY WWTP	M	21	4.8	.025	9.49	7.59
3	TACONITE HARBOR WWTP	M	21	2.9	.000	0.00	0.00
4	TWO HARBORS WWTP	M	21	3.9	.075	25.5	13.4
1	BAPTISM RIVER	T	31	0.07	8.96	62.7	160
2	BEAVER RIVER	T	31	0.31	5.61	19.6	27.6
3	BRULE RIVER	T	31	0.35	8.73	26.7	38.4
4	CASCADE RIVER	T	31	0.[illegible]	3.96	14.3	25.3
5	CROSS RIVER	T	30	0.[illegible]	3.47	10.1	12.1
6	FRENCH RIVER	T	31	0.[illegible]	.889	3.09	5.87
7	GOOSEBERRY RIVER	T	31	0.04	2.74	13.7	36.3
8	KNIFE RIVER	T	31	0.04	2.98	15.7	32.4
9	LESTER RIVER	T	31	0.05	2.18	14.7	37.7
10	MANITOU RIVER	T	31	0.03	4.42	12.1	18.5
11	NEMADJI RIVER	T	31	0.14	4.45	95.8	264
12	PIGEON RIVER	T	31	0.07	25.9	179	261
13	POPLAR RIVER	T	31	0.35	5.60	20.7	33.4
14	SPLIT ROCK RIVER	T	31	0.37	2.34	12.1	26.3
15	ST. LOUIS BAY (RIVER STATION)	T	25	0.11	112	930	1,120
16	SUCKER RIVER	T	31	0.04	1.64	7.64	16.1
17	TEMPERANCE RIVER	T	31	0.04	5.83	17.6	19.5

LBS/DAY = KG/DAY * 2.21
CFS = M3/SEC * 35.3
11/06/75

UPPER GREAT LAKES LAND SOURCE INPUTS

LAKE BASIN: SUPERIOR
REPORTING AGENCY: MINNESOTA

PARAMETER: POTASSIUM
EXP. AS: POTASSIUM
PARAMETER TYPE: DISSOLVED
LOWER LIMIT OF DETECTION: 0.5 MG/L

PERIOD OF RECORD
07-01-74 THRU 06-30-75

	INPUT SOURCES	INPUT TYPE	NO. OF SAMPLES	MEAN CONCENTRATION MG/L	MEAN FLOW (M3/SEC)	MEAN LOADING (KG/DAY)	STANDARD DEVIATION FOR LOADING (KG/DAY)
1	GRAND MARAIS WWTP	M	19	12.1	.006	6.74	4.35
2	SILVER BAY WWTP	M	18	8.9	.022	16.8	18.1
3	TACONITE HARBOR WWTP	M	19	8.0	.000	0.01	0.01
4	TWO HARBORS WWTP	M	19	7.1	.074	46.1	24.5
1	BAPTISM RIVER	T	29	1.6	8.82	1,820	6,870
2	BEAVER RIVER	T	29	1.1	5.87	385	686
3	BRULE RIVER	T	31	1.1	8.73	485	646
4	CASCADE RIVER	T	31	1.2	3.96	246	338
5	CROSS RIVER	T	30	1.4	3.33	282	456
6	FRENCH RIVER	T	28	1.3	.919	69.5	123
7	GOOSEBERRY RIVER	T	28	1.2	2.56	179	312
8	KNIFE RIVER	T	29	1.3	2.95	291	544
9	LESTER RIVER	T	30	1.5	2.25	326	777
10	MANITOU RIVER	T	30	1.2	4.38	289	399
11	NEMADJI RIVER	T	30	2.1	4.56	979	2,220
12	PIGEON RIVER	T	31	1.2	25.9	2,140	2,770
13	POPLAR RIVER	T	30	1.5	5.17	613	1,040
14	SPLIT ROCK RIVER	T	29	1.0	2.38	132	206
15	ST. LOUIS BAY (RIVER STATION)	T	25	1.9	112	20,000	29,100
16	SUCKER RIVER	T	29	1.2	1.66	118	201
17	TEMPERANCE RIVER	T	29	1.2	5.28	544	1,000

LBS/DAY = KG/DAY * 2.21
CFS = M3/SEC * 35.3
11/06/75

UPPER GREAT LAKES LAND SOURCE INPUTS

LAKE BASIN: SUPERIOR
REPORTING AGENCY: MINNESOTA

PARAMETER: RADIOACTIVITY, BETA
EXP. AS: TOTAL BETA
LOWER LIMIT OF DETECTION: 3 PC/L

PERIOD OF RECORD
07-01-73 THRU 06-30-75

	INPUT SOURCES	INPUT TYPE	NO. OF SAMPLES	MEAN CONCENTRATION PC/L	MEAN FLOW (M3/SEC)	MEAN LOADING (KG/DAY)	STANDARD DEVIATION FOR LOADING (KG/DAY)
1	GRAND MARAIS WWTP	M	6	10	.006	NA	
2	SILVER BAY WWTP	M	6	9	.018	NA	
3	TACONITE HARBOR WWTP	M	6	6	.000	NA	
4	TWO HARBORS WWTP	M	6	9	.077	NA	
1	BAPTISM RIVER	T	6	4	14.6	NA	
2	BEAVER RIVER	T	6	3	10.1	NA	
3	BRULE RIVER	T	6	4	9.61	NA	
4	CASCADE RIVER	T	6	4	5.98	NA	
5	CROSS RIVER	T	6	5	3.42	NA	
6	FRENCH RIVER	T	6	4	2.23	NA	
7	GOOSEBERRY RIVER	T	6	5	5.66	NA	
8	KNIFE RIVER	T	6	4	6.98	NA	
9	LESTER RIVER	T	6	6	5.44	NA	
10	MANITOU RIVER	T	6	4	7.13	NA	
11	NEMADJI RIVER	T	6	3	4.26	NA	
12	PIGEON RIVER	T	6	5	36.8	NA	
13	POPLAR RIVER	T	6	4	4.62	NA	
14	SPLIT ROCK RIVER	T	6	4	3.06	NA	
15	ST. LOUIS BAY (RIVER STATION)	T	5	6	191	NA	
16	SUCKER RIVER	T	6	4	3.23	NA	
17	TEMPERANCE RIVER	T	6	4	9.06	NA	

LBS/DAY = KG/DAY * 2.21
CFS = M3/SEC * 35.3
11/06/75

UPPER GREAT LAKES LAND SOURCE INPUTS

LAKE BASIN: SUPERIOR
REPORTING AGENCY: MINNESOTA

PARAMETER: RADIOACTIVITY RADIUM-226
EXP. AS: RADIUM 226
PARAMETER TYPE: TOTAL
LOWER LIMIT OF DETECTION: 02 - 71 PC/L

PERIOD OF RECORD
07-01-73 THRU 06-30-75

	INPUT SOURCES	INPUT TYPE	NO. OF SAMPLES	MEAN CONCENTRATION PC/L	MEAN FLOW (M3/SEC)	MEAN LOADING (KG/DAY)	STANDARD DEVIATION FOR LOADING (KG/DAY)
1	GRAND MARAIS WWTP	M	6	ND	.006	ND	
2	SILVER BAY WWTP	M	6	3	.018	NA	
3	TACONITE HARBOR WWTP	M	6	ND	.000	ND	
4	TWO HARBORS WWTP	M	6	4	.077	NA	
1	BAPTISM RIVER	T	6	ND	14.6	ND	
2	BEAVER RIVER	T	6	ND	10.1	ND	
3	BRULE RIVER	T	6	ND	9.61	ND	
4	CASCADE RIVER	T	6	ND	5.96	ND	
5	CROSS RIVER	T	6	6	3.82	NA	
6	FRENCH RIVER	T	6	6	2.23	NA	
7	GOOSEBERRY RIVER	T	6	ND	5.66	ND	
8	KNIFE RIVER	T	6	ND	6.98	ND	
9	LESTER RIVER	T	6	ND	5.64	ND	
10	MANITOU RIVER	T	6	ND	7.13	ND	
11	NEMADJI RIVER	T	5	ND	10.7	ND	
12	PIGEON RIVER	T	6	ND	36.9	ND	
13	POPLAR RIVER	T	6	ND	9.62	ND	
14	SPLIT ROCK RIVER	T	6	ND	3.06	ND	
15	ST. LOUIS BAY (RIVER STATION)	T	4	ND	177	ND	
16	SUCKER RIVER	T	6	7	3.23	NA	
17	TEMPERANCE RIVER	T	6	ND	9.06	ND	

LBS/DAY = KG/DAY * 2.21
CFS = M3/SEC * 35.3
11/06/75

UPPER GREAT LAKES LAND SOURCE INPUTS

LAKE BASIN: SUPERIOR
REPORTING AGENCY: MINNESOTA

PARAMETER: RADIOACTIVITY, STRONTIUM
EXP. AS: STRONTIUM 90
PARAMETER TYPE: TOTAL
LOWER LIMIT OF DETECTION: 0.2 PC/L

PERIOD OF RECORD
07-01-73 THRU 06-30-75

	INPUT SOURCES	INPUT TYPE	NO. OF SAMPLES	MEAN CONCENTRATION PC/L	MEAN FLOW (M3/SEC)	MEAN LOADING (KG/DAY)	STANDARD DEVIATION FOR LOADING (KG/DAY)
1	GRAND MARAIS WWTP	M	NS				
2	SILVER BAY WWTP	M	NS				
3	TACONITE HARBOR WWTP	M	NS				
4	TWO HARBORS WWTP	M	NS				
1	BAPTISM RIVER	T	6	0.5	14.6	NA	
2	BEAVER RIVER	T	6	0.7	10.1	NA	
3	BAULE RIVER	T	5	0.7	5.58	NA	
4	CASCADE RIVER	T	7	0.4	5.46	NA	
5	CROSS RIVER	T	6	0.6	3.82	NA	
6	FRENCH RIVER	T	6	0.7	2.23	NA	
7	GOOSEBERRY RIVER	T	6	0.7	5.66	NA	
8	KNIFE RIVER	T	6	0.7	0.48	NA	
9	LESTER RIVER	T	6	0.7	5.90	NA	
10	MANITOU RIVER	T	6	0.4	7.13	NA	
11	NEMADJI RIVER	T	5	0.5	10.7	NA	
12	PIGEON RIVER	T	6	0.8	36.8	NA	
13	POPLAR RIVER	T	6	0.6	9.62	NA	
14	SPLIT ROCK RIVER	T	6	0.7	3.08	NA	
15	ST. LOUIS BAY (RIVER STATION)	T	4	0.8	177	NA	
16	SUCKER RIVER	T	6	0.7	3.23	NA	
17	TEMPERANCE RIVER	T	6	0.7	9.06	NA	

LBS/DAY = KG/DAY * 2.21
CFS = M3/SEC * 35.3
11/06/75

UPPER GREAT LAKES LAND SOURCE INPUTS

LAKE BASIN: SUPERIOR
REPORTING AGENCY: MINNESOTA

PARAMETER: RADIOACTIVITY, TRITIUM
EXP. AS: TRITIUM
PARAMETER TYPE: TOTAL
LOWER LIMIT OF DETECTION: 200 PC/L

PERIOD OF RECORD
07-01-73 THRU 06-30-75

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	INPUT SOURCES	INPUT TYPE	NO. OF SAMPLES	MEAN CONCENTRATION PC/L	MEAN FLOW (M3/SEC)	MEAN LOADING (KG/DAY)	STANDARD DEVIATION FOR LOADING (KG/DAY)
1	GRAND MARAIS WWTP	M	NS				
2	SILVER BAY WWTP	M	NS				
3	TACONITE HARBOR WWTP	M	NS				
4	TWO HARBORS WWTP	M	NS				
5	BAPTISM RIVER	T	6	507	14.6	NA	
6	BEAVER RIVER	T	6	393	10.1	NA	
7	BRULE RIVER	T	6	470	9.61	NA	
8	CASCADE RIVER	T	6	388	5.96	NA	
9	CROSS RIVER	T	6	472	3.82	NA	
10	FRENCH RIVER	T	6	410	2.23	NA	
11	GOOSEBERRY RIVER	T	6	415	5.66	NA	
12	KNIFE RIVER	T	6	518	6.48	NA	
13	LESTER RIVER	T	6	330	5.44	NA	
14	MANITOU RIVER	T	6	512	7.13	NA	
15	NEMADJI RIVER	T	5	402	10.7	NA	
16	PIGEON RIVER	T	6	392	36.8	NA	
17	POPLAR RIVER	T	6	470	9.62	NA	
18	SALT ROCK RIVER	T	6	410	3.06	NA	
19	ST. LOUIS BAY (RIVER STATION)	T	4	372	177	NA	
20	SUGAR RIVER	T	6	340	3.23	NA	
21	TEMPERANCE RIVER	T	6	435	9.06	NA	

UPPER GREAT LAKES LAND SOURCE INPUTS

LAKE BASIN: SUPERIOR
REPORTING AGENCY: MINNESOTA

PARAMETER: SELENIUM
EXP. AS: SELENIUM
PARAMETER TYPE: TOTAL
LOWER LIMIT OF DETECTION: 0.002 MG/L

PERIOD OF RECORD
07-01-73 THRU 06-30-75

	INPUT SOURCES	INPUT TYPE	NO. OF SAMPLES	MEAN CONCENTRATION MG/L	MEAN FLOW (M3/SEC)	MEAN LOADING (KG/DAY)	STANDARD DEVIATION FOR LOADING (KG/DAY)
1	GRAND MARAIS WWTP	M	5	ND	.007	ND	
2	SILVER BAY WWTP	M	5	.003	.020	0.00	0.00
3	TACONITE HARBOR WWTP	M	5	ND	.000	ND	
4	TWO HARBORS WWTP	M	6	.003	.077	0.01	0.00
1	BAPTISM RIVER	T	6	ND	14.6	ND	
2	BEAVER RIVER	T	6	ND	10.1	ND	
3	BRULE RIVER	T	6	ND	9.61	ND	
4	CASCADE RIVER	T	6	ND	5.96	ND	
5	CROSS RIVER	T	6	ND	3.82	ND	
6	FRENCH RIVER	T	6	ND	2.23	ND	
7	GOOSEBERRY RIVER	T	6	ND	5.66	ND	
8	KNIFE RIVER	T	5	ND	7.54	ND	
9	LESTER RIVER	T	7	ND	4.70	ND	
10	MANITOU RIVER	T	6	ND	7.13	ND	
11	NEMADJI RIVER	T	7	ND	8.36	ND	
12	PIGEON RIVER	T	6	ND	36.8	ND	
13	POPLAR RIVER	T	6	ND	9.62	ND	
14	SPLIT ROCK RIVER	T	6	ND	3.06	ND	
15	ST. LOUIS BAY (RIVER STATION)	T	6	ND	133	ND	
16	SUCKER RIVER	T	6	ND	3.23	ND	
17	TEMPERANCE RIVER	T	6	ND	7.72	ND	

LBS/DAY = KG/DAY * 2.21
CFS = M3/SEC * 35.3
11/06/75

UPPER GREAT LAKES LAND SOURCE INPUTS

LAKE BASIN: SUPERIOR
REPORTING AGENCY: MINNESOTA

PARAMETER: SILICA
EXP. AS: SILICA, (MG/L AS SIO2)
PARAMETER TYPE: DISSOLVED
LOWER LIMIT OF DETECTION: 0.5 MG/L

PERIOD OF RECORD
07-01-73 THRU 06-30-75

	INPUT SOURCES	INPUT TYPE	NO. OF SAMPLES	MEAN CONCENTRATION MG/L	MEAN FLOW (M3/SEC)	MEAN LOADING (KG/DAY)	STANDARD DEVIATION FOR LOADING (KG/DAY)
1	GRAND MARAIS WWTP	M	18	13.4	.006	7.69	2.95
2	SILVER BAY WWTP	M	17	9.7	.025	21.4	15.4
3	TACONITE HARBOR WWTP	M	18	18.1	.000	0.02	0.01
4	TWO HARBORS WWTP	M	17	6.8	.074	44.2	20.7
1	BAPTISM RIVER	T	30	10.7	7.69	6,110	8,420
2	BEAVER RIVER	T	30	9.7	5.60	3,490	5,400
3	BRULE RIVER	T	30	7.5	8.60	5,580	6,300
4	CASCADE RIVER	T	30	9.6	3.88	2,800	2,880
5	CROSS RIVER	T	30	9.6	3.34	2,440	2,470
6	FRENCH RIVER	T	30	12.9	.879	790	1,170
7	GOOSEBERRY RIVER	T	30	10.8	2.83	2,140	3,260
8	KNIFE RIVER	T	30	12.5	2.92	2,410	3,520
9	LESTER RIVER	T	30	11.5	2.16	1,750	2,920
10	MANITOU RIVER	T	30	11.2	4.39	3,370	4,460
11	NEMADJI RIVER	T	30	13.0	4.37	4,080	4,640
12	PIGEON RIVER	T	29	7.4	26.0	16,100	16,200
13	POPLAR RIVER	T	30	10.2	5.55	4,020	5,380
14	SPLIT ROCK RIVER	T	30	10.7	2.02	1,490	2,620
15	ST. LOUIS BAY (RIVER STATION)	T	24	8.5	115	72,900	85,300
16	SUCKER RIVER	T	30	13.5	1.43	1,270	1,850
17	TEMPERANCE RIVER	T	30	8.7	5.73	3,780	4,000

LBS/DAY = KG/DAY * 2.21
CFS = M3/SEC * 35.3
11/06/75

UPPER GREAT LAKES LAND SOURCE INPUTS

LAKE BASIN: SUPERICR
REPORTING AGENCY: MINNESOTA

PARAMETER: SODIUM
EXP. AS: SODIUM
PARAMETER TYPE: DISSOLVED
LOWER LIMIT OF DETECTION: 0.1 MG/L

PERIOD OF RECORD
07-01-73 THRU 06-30-75

	INPUT SOURCES	INPUT TYPE	NO. OF SAMPLES	MEAN CONCENTRATION MG/L	MEAN FLOW (M3/SEC)	MEAN LOADING (KG/DAY)	STANDARD DEVIATION FOR LOADING (KG/DAY)
1	GRAND MARAIS WWTP	M	20	42.3	.006	23.9	10.5
2	SILVER BAY WWTP	M	18	29.0	.022	52.5	39.4
3	TACONITE HARBOR WWTP	M	19	34.0	.000	0.04	0.02
4	TWO HARBORS WWTP	M	19	25.1	.074	162	90.1
1	BAPTISM RIVER	T	29	11.8	8.82	21,300	105,000
2	BEAVER RIVER	T	30	3.5	5.70	856	839
3	BRULE RIVER	T	31	2.8	8.73	1,590	1,460
4	CASCADE RIVER	T	30	2.9	4.00	731	717
5	CROSS RIVER	T	30	2.8	3.33	650	842
6	FRENCH RIVER	T	28	4.3	.914	198	250
7	GOOSEBERRY RIVER	T	28	3.4	2.54	406	436
8	KNIFE RIVER	T	29	5.3	2.99	649	568
9	LESTER RIVER	T	30	5.6	2.25	562	535
10	MANITOU RIVER	T	30	3.2	4.33	731	864
11	NEMADJI RIVER	T	30	4.4	4.56	1,020	756
12	PIGEON RIVER	T	31	2.8	25.9	4,380	3,200
13	POPLAR RIVER	T	29	3.4	5.72	1,270	1,920
14	SPLIT ROCK RIVER	T	29	3.6	2.38	462	868
15	ST. LOUIS BAY (RIVER STATION)	T	25	9.0	112	58,700	41,800
16	SUCKER RIVER	T	29	4.0	1.66	330	472
17	TEMPERANCE RIVER	T	28	2.7	5.40	842	744

LBS/DAY = KG/DAY * 2.21
CFS = M3/SEC * 35.3
11/06/75

UPPER GREAT LAKES LAND SOURCE INPUTS

LAKE BASIN: SUPERIOR
REPORTING AGENCY: MINNESOTA

PARAMETER: SOLIDS, TOTAL
EXP. AS: SOLIDS, TOTAL
LOWER LIMIT OF DETECTION: 1.0 MG/L

PERIOD OF RECORD
07-01-73 THRU 06-30-75

	INPUT SOURCES	INPUT TYPE	NO. OF SAMPLES	MEAN CONCENTRATION MG/L	MEAN FLOW (M3/SEC)	MEAN LOADING (KG/DAY)	STANDARD DEVIATION FOR LOADING (KG/DAY)
1	GRAND MARAIS WWTP	M	15	560	.007	312	548
2	SILVER BAY WWTP	M	15	243	.020	423	296
3	TACONITE HARBOR WWTP	M	15	301	.000	0.34	0.09
4	TWO HARBORS WWTP	M	15	200	.068	1,180	495
1	BAPTISM RIVER	T	24	73	10.1	57,300	79,700
2	BEAVER RIVER	T	24	85	6.75	40,900	53,600
3	BRULE RIVER	T	24	48	9.57	40,900	41,600
4	CASCADE RIVER	T	24	62	4.01	23,700	33,200
5	CROSS RIVER	T	23	60	3.49	16,900	17,300
6	FRENCH RIVER	T	24	113	.966	6,870	9,740
7	GOOSEBERRY RIVER	T	24	107	2.77	22,200	45,600
8	KNIFE RIVER	T	24	125	3.40	30,400	51,900
9	LESTER RIVER	T	24	116	2.59	22,700	38,500
10	MANITOU RIVER	T	24	70	4.94	27,300	39,400
11	NEMADJI RIVER	T	24	202	5.41	150,000	325,000
12	PIGEON RIVER	T	24	90	28.3	234,000	257,000
13	POPLAR RIVER	T	25	64	6.08	34,100	48,900
14	SPLIT ROCK RIVER	T	24	108	2.73	20,900	35,200
15	ST. LOUIS BAY (RIVER STATION)	T	24	139	115	1,300,000	1,430,000
16	SUCKER RIVER	T	24	113	1.89	15,600	26,100
17	TEMPERANCE RIVER	T	24	58	6.36	32,000	35,500

LBS/DAY = KG/DAY * 2.21
CFS = M3/SEC * 35.3
11/06/75

UPPER GREAT LAKES LAND SOURCE INPUTS

LAKE BASIN: SUPERIOR
REPORTING AGENCY: MINNESOTA

PARAMETER: SOLIDS, TOTAL DISSOLVED
EXP. AS: SOLIDS DISSOLVED
LOWER LIMIT OF DETECTION: 10 MG/L

PERIOD OF RECORD
07-01-73 THRU 06-30-75

	INPUT SOURCES	INPUT TYPE	NO. OF SAMPLES	MEAN CONCENTRATION MG/L	MEAN FLOW (M3/SEC)	MEAN LOADING (KG/DAY)	STANDARD DEVIATION FOR LOADING (KG/DAY)
1	GRAND MARAIS WWTP	M	18	252	.007	144	39.5
2	SILVER BAY WWTP	M	17	231	.020	399	282
3	TACONITE HARBOR WWTP	M	17	261	.000	0.30	0.08
4	TWO HARBORS WWTP	M	17	195	.071	1,190	405
1	BAPTISM RIVER	T	31	45	8.86	27,500	41,300
2	BEAVER RIVER	T	31	56	5.63	17,000	20,100
3	BRULE RIVER	T	31	27	8.73	18,600	17,800
4	CASCADE RIVER	T	31	36	3.96	10,100	8,590
5	CROSS RIVER	T	30	34	3.47	8,640	6,810
6	FRENCH RIVER	T	31	78	.884	3,880	4,790
7	GOOSEBERRY RIVER	T	31	62	2.74	9,510	12,300
8	KNIFE RIVER	T	31	76	2.96	12,000	14,100
9	LESTER RIVER	T	31	85	2.18	9,570	10,900
10	MANITOU RIVER	T	31	43	4.42	12,900	17,400
11	NEMADJI RIVER	T	31	100	4.45	30,900	31,400
12	PIGEON RIVER	T	31	45	25.9	87,800	67,000
13	POPLAR RIVER	T	31	39	5.60	15,500	17,800
14	SPLIT ROCK RIVER	T	31	66	2.34	9,860	18,600
15	ST. LOUIS BAY (RIVER STATION)	T	25	96	112	733,000	627,000
16	SUCKER RIVER	T	31	80	1.64	7,190	10,200
17	TEMPERANCE RIVER	T	31	33	5.83	14,500	14,700

LBS/DAY = KG/DAY * 2.21
CFS = M3/SEC * 35.3
11/06/75

UPPER GREAT LAKES LAND SOURCE INPUTS

LAKE BASIN: SUPERIOR
REPORTING AGENCY: MINNESOTA

PARAMETER: SOLIDS, TOTAL SUSPENDED
EXP. AS: SOLIDS, TOTAL NONFILTABLE
LOWER LIMIT OF DETECTION: 0.5 MG/L

PERIOD OF RECORD
07-01-73 THRU 06-30-75

	INPUT SOURCES	INPUT TYPE	NO. OF SAMPLES	MEAN CONCENTRATION MG/L	MEAN FLOW (M3/SEC)	MEAN LOADING (KG/DAY)	STANDARD DEVIATION FOR LOADING (KG/DAY)
1	GRAND MARAIS WWTP	M	15	49	.007	28.6	16.9
2	SILVER BAY WWTP	M	15	24	.020	41.5	42.3
3	TACONITE HARBOR WWTP	M	15	19	.000	0.02	0.01
4	TWO HARBORS WWTP	M	15	26	.068	167	104
1	BAPTISM RIVER	T	31	3	8.86	4,340	8,270
2	BEAVER RIVER	T	31	5	5.63	3,640	8,240
3	BRULE RIVER	T	31	3	8.73	3,270	8,150
4	CASCADE RIVER	T	31	5	3.96	3,390	7,870
5	CROSS RIVER	T	30	5	3.47	1,420	2,340
6	FRENCH RIVER	T	31	4	.884	696	1,840
7	GOOSEBERRY RIVER	T	31	8	2.74	5,030	16,400
8	KNIFE RIVER	T	30	7	3.04	4,540	14,900
9	LESTER RIVER	T	31	10	2.18	6,130	19,700
10	MANITOU RIVER	T	31	3	4.42	1,670	3,280
11	NEMADJI RIVER	T	31	75	4.45	89,500	280,000
12	PIGEON RIVER	T	31	14	25.9	52,400	130,000
13	POPLAR RIVER	T	31	5	5.60	4,380	8,900
14	SPLIT ROCK RIVER	T	31	5	2.34	1,570	3,560
15	ST. LOUIS BAY (RIVER STATION)	T	25	11	112	179,000	369,000
16	SUCKER RIVER	T	31	5	1.64	1,310	3,600
17	TEMPERANCE RIVER	T	31	5	5.83	3,310	7,310

LBS/DAY = KG/DAY * 2.21
CFS = M3/SEC * 35.3
11/06/75

UPPER GREAT LAKES LAND SOURCE INPUTS

LAKE BASIN: SUPERIOR
REPORTING AGENCY: MINNESOTA

PARAMETER: SULFATE
EXP. AS: SULFATE, (MG/L SO4)
PARAMETER TYPE: TOTAL
LOWER LIMIT OF DETECTION: 0.5 MG/L

PERIOD OF RECORD
07-01-73 THRU 06-30-75

	INPUT SOURCES	INPUT TYPE	NO. OF SAMPLES	MEAN CONCENTRATION MG/L	MEAN FLOW (M3/SEC)	MEAN LOADING (KG/DAY)	STANDARD DEVIATION FOR LOADING (KG/DAY)
1	GRAND MARAIS STP	M	17	23.4	.007	13.5	5.78
2	SILVER BAY STP	M	17	24.1	.020	39.9	25.2
3	TWO HARBORS STP	M	17	17.5	.071	108	53.0
4	**Taconite Harbor STP**	M	17	34.4	.000	.03	
1	BAPTISM RIVER	T	23	9.0	10.4	8,500	11,800
2	BEAVER RIVER	T	24	8.8	6.78	4,430	6,650
3	BRULE RIVER	T	25	11.0	8.41	7,030	11,900
4	CASCADE RIVER	T	26	9.9	3.96	3,760	7,380
5	CROSS RIVER	T	25	9.0	3.44	2,670	3,810
6	FRENCH RIVER	T	23	9.7	1.08	859	1,290
7	GOOSEBERRY RIVER	T	24	9.9	2.81	2,100	4,210
8	KNIFE RIVER	T	24	10.8	3.42	2,630	4,850
9	LESTER RIVER	T	24	10.0	2.58	2,230	3,970
10	MANITOU RIVER	T	25	9.3	4.55	4,210	6,500
11	PIGEON RIVER	T	25	10.1	23.2	23,800	26,500
12	POPLAR RIVER	T	26	8.9	6.04	4,770	6,840
13	SPLIT ROCK RIVER	T	24	9.5	2.75	2,290	3,840
14	ST. LOUIS BAY (RIVER STATION)	T	25	17.0	112	137,000	150,000
15	SUCKER RIVER	T	25	8.8	1.85	1,350	2,660
16	TEMPERANCE RIVER	T	25	9.1	6.39	3,850	4,360
17	**Nemadji River**	T	26	12.2	5.20	5,849	

Reproduced from best available copy.

LBS/DAY = KG/DAY * 2.21
CFS = M3/SEC * 35.3
01/14/76

UPPER GREAT LAKES LAND SOURCE INPUTS

LAKE BASIN: SUPERIOR
REPORTING AGENCY: MINNESOTA

PARAMETER: TEMPERATURE, WATER
EXP. AS: TEMP, WATER(DEGREE CENT)
LOWER LIMIT OF DETECTION: 0.5 DEG. CENT

PERIOD OF RECORD
07-01-73 THRU 06-30-75

	INPUT SOURCES	INPUT TYPE	NO. OF SAMPLES	MEAN CONCENTRATION CENT	MEAN FLOW (M3/SEC)	MEAN LOADING (KG/DAY)	STANDARD DEVIATION FOR LOADING (KG/DAY)
1	GRAND MARAIS WWTP	M	3	43.0	.006	NA	
2	SILVER BAY WWTP	M	3	43.0	.020	NA	
3	TACONITE HARBOR WWTP	M	3	40.7	.000	NA	
4	TWO HARBORS WWTP	M	3	43.0	.080	NA	
1	BAPTISM RIVER	T	31	7.7	8.86	NA	
2	BEAVER RIVER	T	31	6.7	5.63	NA	
3	BRULE RIVER	T	31	7.1	8.73	NA	
4	CASCADE RIVER	T	30	6.3	4.03	NA	
5	CROSS RIVER	T	30	6.5	3.47	NA	
6	FRENCH RIVER	T	30	7.6	.909	NA	
7	GOOSEBERRY RIVER	T	31	6.9	2.74	NA	
8	KNIFE RIVER	T	31	7.4	2.96	NA	
9	LESTER RIVER	T	31	7.5	2.18	NA	
10	MANITOU RIVER	T	31	6.2	4.42	NA	
11	NEMADJI RIVER	T	31	6.9	4.45	NA	
12	PIGEON RIVER	T	31	7.1	25.9	NA	
13	POPLAR RIVER	T	31	6.9	5.60	NA	
14	SPLIT ROCK RIVER	T	31	7.0	2.34	NA	
15	ST. LOUIS BAY (RIVER STATION)	T	25	6.4	112	NA	
16	SUCKER RIVER	T	31	6.9	1.64	NA	
17	TEMPERANCE RIVER	T	31	6.8	5.83	NA	

LBS/DAY = KG/DAY * 2.21
CFS = M3/SEC * 35.3
11/06/75

UPPER GREAT LAKES LAND SOURCE INPUTS

LAKE BASIN: SUPERIOR
REPORTING AGENCY: MINNESOTA

PARAMETER: TURBIDITY
EXP. AS: STD UNITS OF MEASUREMENT
LOWER LIMIT OF DETECTION: 0.2 JTU

PERIOD OF RECORD
07-01-73 THRU 06-30-75

	INPUT SOURCES	INPUT TYPE	NO. OF SAMPLES	MEAN CONCENTRATION STD UNI	MEAN FLOW (M3/SEC)	MEAN LOADING (KG/DAY)	STANDARD DEVIATION FOR LOADING (KG/DAY)
1	GRAND MARAIS WWTP	M	15	36.3	.007	NA	
2	SILVER BAY WWTP	M	15	11.5	.020	NA	
3	TACONITE HARBOR WWTP	M	15	10.9	.000	NA	
4	TWO HARBORS WWTP	M	15	13.7	.068	NA	
1	BAPTISM RIVER	T	31	1.9	8.86	NA	
2	BEAVER RIVER	T	31	5.9	5.63	NA	
3	BRULE RIVER	T	31	3.0	8.73	NA	
4	CASCADE RIVER	T	31	3.0	3.96	NA	
5	CROSS RIVER	T	30	2.0	3.47	NA	
6	FRENCH RIVER	T	31	3.9	.884	NA	
7	GOOSEBERRY RIVER	T	31	9.5	2.74	NA	
8	KNIFE RIVER	T	31	11.7	2.96	NA	
9	LESTER RIVER	T	31	7.7	2.18	NA	
10	MANITOU RIVER	T	31	1.9	4.42	NA	
11	NEMADJI RIVER	T	31	32.6	4.45	NA	
12	PIGEON RIVER	T	31	10.1	25.9	NA	
13	POPLAR RIVER	T	31	3.4	5.60	NA	
14	SPLIT ROCK RIVER	T	31	6.9	2.34	NA	
15	ST. LOUIS BAY (RIVER STATION)	T	25	7.9	112	NA	
16	SUCKER RIVER	T	31	4.2	1.64	NA	
17	TEMPERANCE RIVER	T	31	2.3	5.83	NA	

LBS/DAY = KG/DAY * 2.21
CFS = M3/SEC * 35.3
11/06/75

UPPER GREAT LAKES LAND SOURCE INPUTS

LAKE BASIN: SUPERIOR
REPORTING AGENCY: MINNESOTA

PARAMETER: ZINC
EXP. AS: ZINC
PARAMETER TYPE: TOTAL
LOWER LIMIT OF DETECTION: 0.01 MG/L

PERIOD OF RECORD
07-01-73 THRU 06-30-75

	INPUT SOURCES	INPUT TYPE	NO. OF SAMPLES	MEAN CONCENTRATION MG/L	MEAN FLOW (M3/SEC)	MEAN LOADING (KG/DAY)	STANDARD DEVIATION FOR LOADING (KG/DAY)
1	GRAND MARAIS WWTP	M	6	0.21	.006	0.12	0.06
2	SILVER BAY WWTP	M	6	0.24	.018	0.33	0.20
3	TACONITE HARBOR WWTP	M	6	0.34	.000	0.00	0.00
4	TWO HARBORS WWTP	M	6	0.21	.077	1.46	1.29
1	BAPTISM RIVER	T	26	0.02	9.79	21.2	33.1
2	BEAVER RIVER	T	25	0.04	6.64	20.6	38.4
3	BRULE RIVER	T	27	0.05	9.48	87.5	390
4	CASCADE RIVER	T	27	0.03	4.15	9.90	16.8
5	CROSS RIVER	T	26	0.04	3.49	15.5	52.9
6	FRENCH RIVER	T	26	0.02	1.00	0.87	1.19
7	GOOSEBERRY RIVER	T	26	0.04	2.84	8.17	15.9
8	KNIFE RIVER	T	26	0.02	3.29	5.68	11.6
9	LESTER RIVER	T	25	0.05	2.57	8.11	15.9
10	MANITOU RIVER	T	26	0.03	4.84	18.5	50.6
11	NEMADJI RIVER	T	25	0.03	5.16	23.1	50.8
12	PIGEON RIVER	T	27	0.03	28.4	141	443
13	POPLAR RIVER	T	27	0.02	5.91	10.9	22.2
14	SPLIT ROCK RIVER	T	26	0.02	2.66	8.22	15.7
15	ST. LOUIS BAY (RIVER STATION)	T	22	0.07	121	571	1,320
16	SUCKER RIVER	T	26	0.02	1.79	3.50	6.40
17	TEMPERANCE RIVER	T	26	0.04	6.34	23.6	40.0

LBS/DAY = KG/DAY * 2.21
CFS = M3/SEC * 35.3
11/06/75

APPENDIX B

Data Obtained at Tributaries and Sewage Treatment Plants

STORET RETRIEVAL DATE 75/09/18
LAKE SUPERIOR TRIBUTARY CONTRACT
MUNICIPAL POINT SOURCES
24-HOUR COMPOSITES DONE QUARTERLY

0209 GM-STP
47 46 40.0 090 19 52.0
GRAND MARAIS SEWAGE TRTMNT PLNT
27 MINNESOTA
GRAND MARAIS, MINNESOTA
FINAL EFFLUENT SAMPLE
21MINNS 2244440
2 C999 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	00011 WATER TEMP FAHN	00500 RESIDUE TOTAL MG/L	00530 RESIDUE TOT NFLT MG/L	00515 RESIDUE DISS-105 C MG/L	00070 TURB JKSN JTU	00900 TOT HARD CACO3 MG/L	00410 T ALK CACO3 MG/L	00400 PH SU	00300 DO MG/L	00310 BOD 5 DAY MG/L
73/12/13			47.0	260	48	232	28.0	90	130	7.30	7.1	62.0
74/01/31	14	45						60				
74/02/05			40.0	180	70	110	44.0	100	150	7.50	10.5	240.0
74/02/27	14	45						73	170			
74/03/14	08	45						120	130			
74/04/04	08	45						110	170			
74/05/31	14	45	42.0	260	29	231	21.0	110	62	7.10	10.1	67.0
74/06/15	08	45						94	89			
74/07/31	12	30		450	87	363	120.0	73	150			270.0
74/08/13	16	00		410	56	354	82.0	69	160	7.10		260.0
74/09/11	12	00		210	40	170	12.0	73	100	7.00		61.0
74/10/09	11	10		330	59	271	28.0	63	170			94.0
74/11/20	10	00	43.0	270	42	228	30.0	84	110			50.0
74/12/11	08	30		440	120	320	63.0	100	170			120.0
75/01/16	08	30		220	25	195	13.0	80	70			40.0
75/02/20	08	15		4300	38	4262	19.0	100	100			57.0
75/03/21	08	30		270	23	247	19.0	110	80			31.0
75/04/16	13	35		220	34	186	16.0	74	59			31.0
75/05/14	15	15		300	41	259	23.0	110	120			120.0
75/06/18	08	45		265	29	236	27.0	78	130			89.0

STORET RETRIEVAL DATE 75/09/19
LAKE SUPERIOR TRIBUTARY CONTRACT
MUNICIPAL POINT SOURCES
24-HOUR COMPOSITES DONE QUARTERLY

0209 GM-STP
47 46 40.0 090 19 52.0
GRAND MARAIS SEWAGE TRTMNT PLNT
27 MINNESOTA
GRAND MARAIS, MINNESOTA
FINAL EFFLUENT SAMPLE
21MINNS 2244440
2 0999 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	00665 PHOS-TOT MG/L P	00610 NH3-N TOTAL MG/L	00615 NO2-N TOTAL MG/L	00620 NO3-N TOTAL MG/L	00605 ORG N N MG/L	00095 CNDUCTVY AT 25C MICROMHO	00940 CHLORIDE CL MG/L	00945 SULFATE SO4-TOT MG/L	00950 FLUORIDE F,DISS MG/L	01042 COPPER CU,TOT UG/L
73/12/13			2.700	11.000								
74/01/31	14 45		9.100					340	25	25	0.72	83
74/02/06			9.300	21.000					27		1.20	
74/02/27	14 45		21.000					450	27	34	0.93	120
74/03/14	08 45		3.100						51		0.94	
74/04/04	08 45		3.700						67		0.65	
74/05/01	14 45		3.500	2.600				440	73		0.69	
74/05/15	08 45		0.640					320	48	24	0.44	67
74/05/18	15 15		6.700					310	39	25	0.28	
74/07/11	12 30		15.000	18.000	0.090	0.120	8.800	360	51	43		
74/08/13	16 00		11.000	17.000	0.090	0.490	5.700	480	32	25	1.10	79
74/09/11	12 00		4.200	5.800	0.040	0.100K	4.100	460	31	27	0.83	
74/10/09	11 10		5.500	13.000	0.040	0.100K	8.900	320	21	20	0.48	
74/11/20	13 00		2.800	1.800	0.010	14.000	0.950	410	46	8	0.80	
74/12/11	08 30		4.200	25.000	0.220	0.400	14.000	330	24	23	0.75	68
75/01/16	08 30		2.700	3.000	0.120	2.000	10.000	500	66	23	0.66	
75/02/25	03 15		3.800	9.200	0.020	0.140	9.600	330	40	10	0.56	
75/03/21	08 30		2.400	3.400	0.040	1.800	5.300	470	69	15	0.73	
75/04/16	13 35		1.700	1.300	0.070	3.000	4.300	390	50	20	0.30	33
75/05/14	15 15		5.200	13.000	0.050	0.350	8.200	290	40	13	0.37	
75/06/18	03 45		5.400	10.000	0.110	0.100K	7.600	360	50	37	0.59	
								400	33	20	0.78	

STORET RETRIEVAL DATE 75/09/13
LAKE SUPERIOR TRIBUTARY CONTRACT
MUNICIPAL POINT SOURCES
24-HOUR COMPOSITES DONE QUARTERLY

0209 GM-STP
47 46 40.0 090 19 52.0
GRAND MARAIS SEWAGE TRTMNT PLNT
27 MINNESOTA
GRAND MARAIS, MINNESOTA
FINAL EFFLUENT SAMPLE
21MINNS 2244440
2 0599 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	01027 CADMIUM CD,TOT UG/L	01067 NICKEL NI,TOTAL UG/L	01092 ZINC ZN,TOT UG/L	01051 LEAD PB,TOT UG/L	71900 MERCURY HG,TOTAL UG/L	01002 ARSENIC AS,TOT UG/L	01147 SELENIUM SE,TOT UG/L	01045 IRON FE,TOT UG/L	01055 MANGNESE MN UG/L	00910 CALCIUM CACO3 MG/L
73/12/13			10K	10K	160	120	1.3	10K		1900	490.0	60.0
74/01/31	14 45											47.0
74/02/[illegible]			10K	10K	240	10K	1.1	10K	5K	2300	120.0	44.0
74/02/27	14 45											63.0
74/03/14	08 45											73.0
74/04/04	08 45											64.0
74/05/01	14 45		10K	10K	190	23	1.1	10K	2K	1100	170.0	68.0
74/05/15	08 45											65.0
74/07/02	12 30		10K	11	210	33	0.1	10K	2K	2200	93.0	50.0
74/08/13	16 00											47.0
74/09/11	12 00											50.0
74/10/09	11 10											50.0
74/11/20	13 00		28	10K	400	17	0.3	10K	2K	1200	240.0	63.0
74/12/11	08 30											70.0
75/01/16	08 30											54.0
75/02/25	08 15											68.0
75/03/21	08 30		10K	10K	48	15	0.2	10K	2K	620	120.0	70.0
75/04/16	13 35											61.0
75/05/14	15 15											63.0
75/06/18	08 45											68.0

STORET RETRIEVAL DATE 75/03/13
LAKE SUPERIOR TRIBUTARY CONTRACT
MUNICIPAL POINT SOURCES
24-HOUR COMPOSITES DONE QUARTERLY

0209 GM-STP
47 46 40.0 090 19 52.0
GRAND MARAIS SEWAGE TRTMNT PLNT
27 MINNESOTA
GRAND MARAIS, MINNESOTA
FINAL EFFLUENT SAMPLE
21MINAS 7244440
2 0999 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	00930 SODIUM NA.DISS MG/L	00935 POTSSIUM K.DISS MG/L	39504 AROCLOR 1254 UG/L	01501 ALPHA TOTAL PC/L	01502 ALPHA-T ERROR PC/L	03501 BETA TOTAL PC/L	03502 BETA-T ERROR PC/L	39370 DDT WHL SMPL UG/L	00720 CYANIDE CN-TOT MG/L
73/12/13			37.00	9.70							
74/01/31	14 45		61.00	33.00		2K		12	3	0.030K	0.005K
74/02/05			33.00	31.00		4K		15	3		0.009
74/02/27	14 45		55.00								
74/03/14	08 45		47.00	9.70							
74/03/26	08 45		47.00	14.00							
74/05/01	14 45		27.00	6.00		3K		8	4		0.005K
74/05/13	08 45		21.00	12.00							
74/07/31	12 30		54.00	7.00		3K		8	3		0.005K
74/08/13	16 00		62.00	17.00							0.005K
74/09/11	12 00		45.00	5.60							
74/10/04	11 10		73.00	17.00							
74/11/20	13 00		53.00	12.00		3K		10	3		0.005K
74/12/11	08 30		37.00	12.00							
75/01/16	08 30		21.00	7.50							
75/02/26	08 15		56.00	7.80							
75/03/21	08 30		23.00	2.00		4K		6	3		
75/04/16	13 35		24.00	7.30							
75/05/14	13 15		43.00	9.00							
75/06/18	08 45		42.00	8.40							

STORET RETRIEVAL DATE 75/09/13
LAKE SUPERIOR TRIBUTARY CONTRACT
MUNICIPAL POINT SOURCES
24-HOUR COMPOSITES DONE QUARTERLY

0209 GM-STP
47 46 43.0 090 13 52.0
GRAND MARAIS SEWAGE TRTMNT.PLNT
27 MINNESOTA
GRAND MARAIS, MINNESOTA
FINAL EFFLUENT SAMPLE
21MINNS 2244440
2 0999 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	32730 PHENOLS TOTAL UG/L	01037 BARIUM BA,TOT UG/L	00550 OIL-GRSE TOT-SXLT MG/L	00955 SILICA DISOLVED MG/L	01034 CHROMIUM CR,TOT UG/L	74020 FLOW PUMP OUT MGD
73/12/13			63	30K	14.5			0.13
74/01/31	14 45					14.0		0.14
74/02/06			310	45	32.9			0.14
74/02/27	14 45					14.0		0.13
74/03/14	08 45					11.0		0.13
74/04/04	08 45					11.0		0.13
74/05/01	14 45		250	10K	6.7			0.14
74/05/15	08 45					13.0		0.14
74/05/19	15 15					16.0		0.15
74/07/31	12 30		94			17.7	3	0.20
74/08/13	16 00		87			21.0		0.21
74/09/11	12 00		44			11.0		0.15
74/10/08	11 10		67			13.0		0.14
74/11/20	10 00		220		22.9	13.0	4	0.13
74/12/11	08 30		72		30.5	11.0		0.14
75/01/16	08 30		35			13.0		0.14
75/02/25	08 15		4			13.0		0.14
75/03/21	08 30		36			9.1	2	0.13
75/04/16	15 35					11.0		0.13
75/05/14	15 15		30			13.0		0.14
75/06/18	08 45		35			14.0		0.16

START RETRIEVAL DATE 75/07/18
LAKE SUPERIOR TRIBUTARY CONTRACT
MUNICIPAL POINT SOURCES
24-HOUR COMPOSITES DONE QUARTERLY

0207 SB-STP
47 17 32.0 091 14 58.0
SILVER BAY SEWAGE TREATMENT PLNT
27 MINNESOTA
SILVER BAY, MINNESOTA
FINAL EFFLUENT SAMPLE
21MINNS 2244440
2 0999 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	00011 WATER TEMP FAHN	00500 RESIDUE TOTAL MG/L	00530 RESIDUE TOT NFLT MG/L	00515 RESIDUE DISS-105 C MG/L	00070 TURB JKSN JTU	00900 TOT HARD CACO3 MG/L	00410 T ALK CACO3 MG/L	00400 PH SU	00300 DO MG/L	00310 BOD 5 DAY MG/L
74/12/14			45.0	240	25	215	12.0	90	130	7.50	6.0	32.0
74/12/30			44.0	120	38	92	15.0	70	170	7.80	6.1	97.0
74/03/13	07 00							150	220	7.70		
74/04/02	14 45							110	270			
74/03/31	10 45		40.0	260	32	228	13.0	130	110	7.10	8.0	63.0
74/03/15	11 20							150	160			
74/07/31	13 30			270	24	246	14.0	100	110			25.0
74/03/03	13 45			260	16	244	14.0	120	65	7.20		41.0
74/07/11	17 00			220	48	172	8.0	73	80	7.10		40.0
74/10/07	14 30			240	20	220	8.5	85	140			45.0
74/11/20	13 30		37.0	280	23	257	12.0	120	110			26.0
74/12/10	10 00			230	13	217	9.5	90	110			21.0
75/01/16	11 15			250	35	215	6.0	130	140			20.0
75/02/26	13 45			210	14	196	13.0	100	110			7.1
75/03/20	15 45			280	33	247	21.0	140	100			29.0
75/04/17	10 00			230	10	220	6.7	170	130			19.0
75/05/15	11 00			290	10	280	8.5	180	150			21.0
75/06/18	11 30			272	16	256	12.0	120	100			37.0

STORET RETRIEVAL DATE 75/07/18
LAKE SUPERIOR TRIBUTARY CONTRACT
MUNICIPAL POINT SOURCES
24-HOUR COMPOSITES DONE QUARTERLY

0207 SB-STP
47 17 32.0 091 14 59.0
SILVER BAY SEWAGE TREATMENT PLNT
27 MINNESOTA
SILVER BAY, MINNESOTA
FINAL EFFLUENT SAMPLE
21MINNS 2244440
2 0999 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	00665 PHOS-TOT MG/L P	00610 NH3-N TOTAL MG/L	00615 NO2-N TOTAL MG/L	00620 NO3-N TOTAL MG/L	00605 ORG N N MG/L	00095 CNDUCT/Y AT 25C MICROMHO	00940 CHLORIDE CL MG/L	00945 SULFATE SO4-TOT MG/L	00950 FLUORIDE F,DISS MG/L	01042 COPPER CU,TOT UG/L
73/12/14			3.900	12.000								
74/01/29	17 00		4.900					340	19	20	0.87	67
74/02/26			10.000	18.000					19			
74/02/27	07 00		5.700					440	23	44	0.85	83
74/03/13	09 00		3.000						40			
74/04/02	14 45		7.000						22		0.55	
74/05/01	10 45		4.600	0.200					28		0.42	
74/05/15	11 20		3.700					350	25	20	0.64	67
74/05/18	13 15		5.000					340	15	24	0.51	
74/07/31	15 30		8.300	8.900	0.950	3.400	3.500	360	20	32		
74/11/13	13 45		6.800	10.000	0.110	8.100	2.800	350	22	22	0.81	46
74/07/11	17 00		6.200	11.000	0.060	3.300	3.700	380	26	25	0.73	
74/10/08	14 30		5.500	15.000	0.470	0.820	4.800	360	23	26	0.83	
74/11/20	13 00		4.200	12.000	2.300	0.490	5.500	390	25	24	0.75	
74/12/10	13 00		5.100	15.000	1.200	9.200	4.100	400	50	26	0.77	37
75/01/15	11 15		3.100	12.000	0.300	2.700	3.500	90	21	18	0.97	
75/02/26	10 45		4.600	14.000	0.160	2.600	3.400	400	29	19	0.69	
75/03/20	13 45		2.700	3.500	0.200	0.920	3.500	400	33	19	0.92	
75/04/17	13 00		1.100	2.700	0.040	0.910	3.400	360	33	16	0.46	55
75/05/15	11 00		0.910	2.100	0.050	1.200	2.600	310	28	12	0.40	
75/05/18	11 30		5.100	8.700	0.320	11.000	4.400	383	41	41	0.08	
								390	24	19	0.62	

STORET RETRIEVAL DATE 75/07/18
LAKE SUPERIOR TRIBUTARY CONTRACT
MUNICIPAL POINT SOURCES
24-HOUR COMPOSITES DONE QUARTERLY

C207 SD-STP
47 17 32.0 091 14 58.0
SILVER BAY SEWAGE TREATMENT PLNT
27 MINNESOTA
SILVER BAY, MINNESOTA
FINAL EFFLUENT SAMPLE
21MINNS 2244440
2 0999 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	01027 CADMIUM CD,TOT UG/L	01067 NICKEL NI,TOTAL UG/L	01092 ZINC ZN,TOT UG/L	01051 LEAD PB,TOT UG/L	71900 MERCURY HG,TOTAL UG/L	01002 ARSENIC AS,TOT UG/L	01147 SELENIUM SE,TOT UG/L	01045 IRON FE,TOT UG/L	01055 MANGNESE MN UG/L	00910 CALCIUM CACO3 MG/L
73/12/14			10K	10K	150	10K	0.5	10K		1300	11.0	61.0
74/02/05			10K	10K	140	10K	1.2	10K	5K	800	93.0	49.0
74/03/13	07 00											93.0
74/04/02	14 45											52.0
74/05/01	10 45		10K	10K	130	11	0.8	10K	2K	910	83.0	73.0
74/05/15	11 20											90.0
74/07/31	13 30		44	10K	490	18	0.1K	10K	2K	1200	61.0	63.0
74/08/13	13 45											74.0
74/09/11	17 00											50.0
74/10/04	14 30											70.0
74/11/20	13 00		24	10K	410	15	0.7	10K	2K	620	150.0	85.0
74/12/10	10 00											66.0
75/01/16	11 15											85.0
75/02/26	10 45											65.0
75/03/20	13 45		10K	10K	130	13	2.3	10K	3	990	88.0	100.0
75/04/17	10 00											100.0
75/05/15	11 00											110.0
75/06/18	11 30											66.0

STORET RETRIEVAL DATE 75/09/18
LAKE SUPERIOR TRIBUTARY CONTRACT
MUNICIPAL POINT SOURCES
24-HOUR COMPOSITES DONE QUARTERLY

0207 SB-STP
47 17 32.0 091 14 58.0
SILVER BAY SEWAGE TREATMENT PLNT
27 MINNESOTA
SILVER BAY, MINNESOTA
FINAL EFFLUENT SAMPLE
21MINNS 2244440
2 0999 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	00930 SODIUM NA,DISS MG/L	00935 POTASSIUM K,DISS MG/L	39504 AROCLOR 1254 UG/L	01501 ALPHA TOTAL PC/L	01502 ALPHA-T ERROR PC/L	03501 BETA TOTAL PC/L	03502 BETA-T ERROR PC/L	39370 DOT WHL SMPL UG/L	00720 CYANIDE CN-TOT MG/L
73/12/14			34.00	10.00							
74/02/06			50.00	29.00		2K		13	3	0.030K	0.010
74/03/13	07 00		21.00	5.00		3K		11	2		0.007
74/04/02	14 45		46.00	21.00							
74/05/01	10 45		19.00	9.00		3K		11	4		0.005K
74/05/15	11 20		20.00	14.00							
74/07/31	15 30		31.00	4.90		3K		6	3		0.038
74/08/13	13 45		25.00	5.20							0.050
74/09/11	17 00		30.00	7.60							
74/10/09	14 30		49.00	7.90							
74/11/20	13 00		29.00	10.00		5	4	11	3		0.010
74/12/10	10 00		24.00	7.50							
75/01/16	11 15		24.00	7.40							
75/02/26	10 45		39.00	9.90							
75/03/20	15 45		16.00	3.40		4K		5	3		
75/04/17	10 00		11.00	2.20							
75/05/15	11 00		22.00	3.50							
75/06/13	11 30		28.00	7.20							

STORET RETRIEVAL DATE 75/03/18
LAKE SUPERIOR TRIBUTARY CONTRACT
MUNICIPAL POINT SOURCES
24-HOUR COMPOSITES DONE QUARTERLY

0207 SB-STP
47 17 32.0 091 14 58.0
SILVER BAY SEWAGE TREATMENT PLNT
27 MINNESOTA
SILVER BAY, MINNESOTA
FINAL EFFLUENT SAMPLE
21MINNS 2244440
2 0999 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	32730 PHENOLS TOTAL UG/L	01007 BARIUM BA,TOT UG/L	00550 OIL-GRSE TOT-SXLT MG/L	00955 SILICA DISOLVED MG/L	01034 CHROMIUM CR,TOT UG/L	74020 FLOW PUMP OUT MGD
73/12/14			15	560	3.2			0.20
74/01/29	17 00					7.8		1.60
74/02/06			25	15	11.5			0.20
74/02/27	09 00					7.6		
74/03/13	09 00					9.9		1.20
74/04/02	14 45					9.1		1.00
74/05/01	10 45		53	49	2.9			1.00
74/05/15	11 20					11.0		0.30
74/06/18	13 15					9.0		0.80
74/07/31	15 30		38			7.4	2K	0.30
74/08/13	13 45		8			8.7		0.20
74/09/11	17 00		12			6.7		0.20
74/10/03	14 30		12			9.1		0.30
74/11/20	13 00		31			11.0	11	0.30
74/12/10	10 00		14			10.0		0.30
75/01/16	11 15		6			11.0		1.20
75/02/26	10 45		13			9.1		3.30
75/03/20	15 45		65			9.5	6	0.50
75/04/17	10 00		12					0.50
75/05/15	11 00		9			19.0		0.50
75/06/18	11 30		14			8.6		0.50

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STORET RETRIEVAL DATE 75/09/19
LAKE SUPERIOR TRIBUTARY CONTRACT
MUNICIPAL POINT SOURCES
24-HOUR COMPOSITES DONE QUARTERLY

0209 TACH-STP
47 30 32.0 090 56 19.0
TACONITE HARBOR STP
27 MINNESOTA
TACONITE HARBOR, MINN.
FINAL EFFLUENT SAMPLE
21MINNS 2244440
2 0999 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	00011 WATER TEMP FAHN	00500 RESIDUE TOTAL MG/L	00530 RESIDUE TOT NFLT MG/L	00515 RESIDUE DISS-105 C MG/L	00070 TURB JKSN JTU	00900 TOT HARD CACO3 MG/L	00410 T ALK CACO3 MG/L	00400 PH SU	00300 DO MG/L	00310 BOD 5 DAY MG/L
73/12/14			44.0	310	22	288	17.0	120	140	8.00	5.8	3.6
74/01/30	11 00							130				
74/02/06			41.0	200	42	158	14.0	130	150	7.90	12.2	97.0
74/03/13	10 15							100	130	7.70		
74/04/03	10 15							140	210			
74/05/01	12 15		57.0	270	20	250	14.0	140	110	7.70	12.9	21.0
74/05/15	11 00							130	92			
74/07/31	14 30			390	27	363	17.0	150	180			26.0
74/08/13	14 30			390	25	367	13.0	150	130	7.60		24.0
74/09/11	15 00			390	24	366	7.0	150	140	7.70		6.0
74/10/09	13 45			360	12	348	8.0	160	190			9.8
74/11/20	11 15		54.0	340	6	334	7.0	190	150			5.4
74/12/10	12 15			190	11	179	5.5	160	150			3.7
75/01/16	09 20			270	10	260	8.0	160	110			4.2
75/02/25	09 20			380	7	373	4.0	120	99			4.9
75/03/20	10 45			270	23	247	16.0	100	100			17.0
75/04/16	10 50			190	25	165	16.0	97	87			14.0
75/05/15	09 30			190	10	180	8.2	110	88			24.0
75/06/18	10 15			377	17	360	8.9	160	142			7.5

STORET RETRIEVAL DATE 75/09/18
LAKE SUPERIOR TRIBUTARY CONTRACT
MUNICIPAL POINT SOURCES
24-HOUR COMPOSITES ONCE QUARTERLY

0208 TACH-STP
47 30 52.0 091 56 19.0
TACONITE HARBOR STP
27 MINNESOTA
TACONITE HARBOR, MINN.
FINAL EFFLUENT SAMPLE
21MINNS 2244440
2 0999 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	00665 PHOS-TOT MG/L P	00610 NH3-N TOTAL MG/L	00615 NO2-N TOTAL MG/L	00620 NO3-N TOTAL MG/L	00605 ORG N N MG/L	00095 CNDUCTVY AT 25C MICROMHO	00940 CHLORIDE CL MG/L	00945 SULFATE SO4-TOT MG/L	00950 FLUORIDE F,DISS MG/L	01042 COPPER CU,TOT UG/L
73/12/14			2.400	4.100								
74/01/30	11 00		5.400					390	23	29	0.16	21
									33		0.14	
74/02/06			6.400	21.000								
74/02/27	12 00		5.700					560	29	38	0.13	83
74/03/13	10 15		3.400						35			
74/03/03	10 15		0.320						24		0.10	
									44		0.16	
74/03/01	12 15		1.700	2.000				340	31	28	0.10	10K
74/03/15	11 00		1.300					250	16	37	0.10K	
74/03/15	14 45		1.300					370	29	42		
74/07/31	14 30		3.500	10.000	0.210	1.800	4.500	440	33	39	0.14	33
74/03/13	14 30		4.000	2.400	0.410	8.100	4.100	450	33	36	0.13	
74/03/11	15 00		1.400	0.350	0.020	5.900	3.500	470	39	36	0.18	
74/10/09	13 45		3.800	5.200	0.120	4.500	3.200	500	49	41	0.13	
74/11/20	11 15		1.800	1.400	0.110	7.500	2.900	440	29	42	0.14	20
74/12/10	12 15		4.000	1.300	0.060	12.000	2.400	470	33	40	0.13	
75/01/16	07 20		1.000	1.500	0.070	2.900	1.800	370	34	31	0.10K	
75/02/26	09 20		4.900	0.160	0.010K	16.000	2.200	520	44	39	0.15	
75/03/20	16 45		3.200	0.330	0.020	5.300	3.800	310	32	28	0.13	17
75/04/16	10 30		1.200	0.990	0.050	0.790	3.200	250	27	22	0.23	
75/05/15	07 30		1.800	0.050	0.020	0.100K	0.480	191	26	24	0.05	
75/06/18	10 15		2.300	0.180	0.020	9.300	4.000	450	34	34	0.13	

STORET RETRIEVAL DATE 75/09/19
LAKE SUPERIOR TRIBUTARY CONTRACT
MUNICIPAL POINT SOURCES
24-HOUR COMPOSITES DONE QUARTERLY

0208 TACH-STP
47 30 52.0 091 56 19.0
TACONITE HARBOR STP
27 MINNESOTA
TACONITE HARBOR, MINN.
FINAL EFFLUENT SAMPLE
21MINNS 2244440
2 0999 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	01027 CADMIUM CD,TOT UG/L	01067 NICKEL NI,TOTAL UG/L	01092 ZINC ZN,TOT UG/L	01051 LEAD PB,TOT UG/L	71900 MERCURY HG,TOTAL UG/L	01002 ARSENIC AS,TOT UG/L	01147 SELENIUM SE,TOT UG/L	01045 IRON FE,TOT UG/L	01055 MANGNESE MN UG/L	00910 CALCIUM CACO3 MG/L
73/12/14			12	10K	210	10K	0.5	10K		2700	220.0	65.0
74/01/30	11 00											110.0
74/02/26			10K	10K	100	10K	1.4	10K	5K	1900	210.0	87.0
74/03/13	10 15											77.0
74/04/03	10 15											86.0
74/05/31	12 15		10K	10K	94	10K	0.5	10K	2K	2200	400.0	96.0
74/06/15	11 00											95.0
74/07/31	14 30		10K	10K	1400	42	0.3	10K	2K	1900	290.0	110.0
74/08/13	14 30											110.0
74/09/11	16 00											150.0
74/10/29	13 45											140.0
74/11/20	11 15		10K	10K	110	12	0.5	10K	2K	730	590.0	150.0
74/12/10	12 15											150.0
75/01/15	09 20											110.0
75/02/26	09 20											78.0
75/03/20	10 45		10K	10K	140	10K	0.4	10K	3	1300	290.0	72.0
75/04/15	10 30											74.0
75/05/15	09 30											62.0
75/06/18	10 15											120.0

STORET RETRIEVAL DATE 75/09/18
LAKE SUPERIOR TRIBUTARY CONTRACT
MUNICIPAL POINT SOURCES
24-HOUR COMPOSITES DONE QUARTERLY

0208 TACH-STP
47 30 52.0 090 56 19.0
TACONITE HARBOR STP
27 MINNESOTA
TACONITE HARBOR, MINN.
FINAL EFFLUENT SAMPLE
21MINNS 2244440
2 0999 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	00930 SODIUM NA,DISS MG/L	00935 POTSSIUM K,DISS MG/L	39504 AROCLOR 1254 UG/L	01501 ALPHA TOTAL PC/L	01502 ALPHA-T ERROR PC/L	03501 BETA TOTAL PC/L	03502 BETA-T ERROR PC/L	39370 DDT WHL SMPL UG/L	00720 CYANIDE CN-TOT MG/L
73/12/14			31.00	4.70							
74/01/30	11 00		33.00	21.00		3K		5	2	0.030K	0.010
74/02/3.			52.00	22.00		4K		6	4		0.020
74/03/13	10 15		33.00	6.30							
74/04/30	10 15		49.00	8.50							
74/05/01	12 15		21.00	5.00		4K		6K			0.005K
74/05/15	11 00		12.00	3.20							
74/07/31	14 30		37.00	6.10		4K		4	3		0.020
74/08/13	14 30		34.00	4.90							0.070
74/09/11	15 00		37.00	4.80							
74/10/09	13 45		61.00	9.10							
74/11/20	11 15		24.00	5.30		4K		6	3		0.012
74/12/10	12 15		33.00	5.90							
75/01/16	09 20		20.00	1.60							
75/02/26	09 20		56.00	6.90							
75/03/20	10 45		26.00	4.10		3K		9	3		
75/04/16	10 50		13.00	16.00							
75/05/15	09 30		14.00	4.10							
75/06/18	10 15		38.00	5.20							

STORET RETRIEVAL DATE 75/09/18
LAKE SUPERIOR TRIBUTARY CONTRACT
MUNICIPAL POINT SOURCES
24-HOUR COMPOSITES DONE QUARTERLY

0208 TACH-STP
47 30 32.0 091 55 19.0
TACONITE HARBOR STP
27 MINNESOTA
TACONITE HARBOR, MINN.
FINAL EFFLUENT SAMPLE
21MINNS 2244440
2 0999 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	32730 PHENOLS TOTAL UG/L	01007 BARIUM BA,TOT UG/L	00550 OIL-GRSE TOT-SXLT MG/L	00955 SILICA DISOLVED MG/L	01034 CHROMIUM CR,TOT UG/L	74020 FLOW PUMP OUT MGD
73/12/14			140	30K	4.6			0.0003
74/01/30	11 00					23.0		0.0003
74/02/06			9	15K	7.0			0.0003
74/02/27	12 00					18.0		
74/03/13	10 15					18.0		0.0003
74/04/03	10 15					23.0		0.0003
74/05/01	12 15		10	10K	2.1			0.0003
74/05/12	11 00					14.0		0.0003
74/06/18	14 45					19.0		0.0003
74/07/31	14 30		14			19.0	2K	0.0003
74/08/13	14 30		12			17.0		0.0003
74/09/11	16 00		5			17.0		0.0003
74/10/09	13 45		4			23.0		0.0003
74/11/20	11 15		82			23.0	2K	0.0003
74/12/10	12 15		2K			24.0		0.0003
75/01/16	09 20		4			18.0		0.0003
75/02/26	09 20		4			21.0		0.0003
75/03/20	16 45		140			11.0	2	0.0003
75/04/15	10 50		4			13.0		0.0003
75/05/15	09 30		5			6.0		0.0003
75/06/18	10 15		9			19.0		0.0003

STORET RETRIEVAL DATE 75/09/10
LAKE SUPERIOR TRIBUTARY CONTRACT
MUNICIPAL POINT SOURCES
24-HOUR COMPOSITES DONE QUARTERLY

0206 TH-STP
47 00 33.0 091 39 56.0
TWO HARBORS SEWAGE TREATMENT PLT
27 MINNESOTA
TWO HARBORS, MINNESOTA
FINAL EFFLUENT SAMPLE
21MINNS 2244440
2 0999 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	00011 WATER TEMP FAHN	00530 RESIDUE TOTAL MG/L	00534 RESIDUE TOT NFLT MG/L	00515 RESIDUE DISS-105 C MG/L	00070 TURB JKSN JTU	00900 TOT HARD CACO3 MG/L	00410 T ALK CACO3 MG/L	00400 PH SU	00300 DO MG/L	00310 BOD 5 DAY MG/L
73/12/20			44.0	200	20	180	13.0	58	85	6.90	8.5	78.0
74/02/06			42.0	92	49	43	20.0	57	110	7.50	8.9	82.0
74/02/26	12 00							73	130			
74/03/12	11 45							99	140	7.60		54.0
74/04/02	11 00							81	160			
74/05/01	07 45		43.0	230	31	199	13.0	120	110	7.20	10.2	58.0
74/05/15	15 30							150	150			
74/07/31	15 30			200	34	166	22.0	78	90			47.0
74/08/13	10 15			170	29	141	8.2	93	80	7.20		46.0
74/09/11	13 00			180	22	158	14.0	70	100	6.90		62.0
74/10/01	16 15			220	39	191	21.0	64	120			88.0
74/11/20	15 15		48.0	240	46	194	25.0	91	97			70.0
74/12/11	15 15			150	15	135	5.7	81	98			11.0
75/01/16	15 00			180	23	157	17.0	67	66			37.0
75/02/26	14 20			190	18	172	6.0	73	95			14.0
75/03/20	14 15			240	20	220	11.0	120	89			25.0
75/04/17	12 00			240	32	208	15.0	130	120			30.0
75/05/15	13 15			230	10	220	9.5	170	160			170.0
75/06/18	15 00			215	7	208	4.5	100	69			23.0

STORET RETRIEVAL DATE 75/09/18
LAKE SUPERIOR TRIBUTARY CONTRACT
MUNICIPAL POINT SOURCES
24-HOUR COMPOSITES DONE QUARTERLY

0206 TH-STP
47 00 38.0 091 39 56.0
TWO HARBORS SEWAGE TREATMENT PLT
27 MINNESOTA
TWO HARBORS, MINNESOTA
FINAL EFFLUENT SAMPLE
21MINNS 2244440
2 0999 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	00665 PHOS-TOT MG/L P	00610 NH3-N TOTAL MG/L	00615 NO2-N TOTAL MG/L	00620 NO3-N TOTAL MG/L	00605 ORG N N MG/L	00095 CNDUCTVY AT 25C MICROMHO	00940 CHLORIDE CL MG/L	00945 SULFATE SO4-TOT MG/L	00950 FLUORIDE F,DISS MG/L	01042 COPPER CU,TOT UG/L
73/12/20			2.400	15.000				320	32	18	1.10	42
74/01/29	11 30		7.300						17			
74/02/06			4.400	8.700				290	24	18	1.10	42
74/02/26	12 00		6.200						18		1.10	
74/03/12	11 45		4.300						33		0.90	
74/04/02	11 00		4.300						24		1.10	
74/05/01	09 45		3.200					310	22	18	0.94	58
74/05/15	15 30		3.100					330	20	23	0.75	
74/05/18	11 15		3.400					330	22	29		
74/07/31	16 30		3.900	6.300	0.010K	0.220	3.200	260	17	12	0.85	33
74/08/13	13 15		3.200	11.000	0.050	0.240	2.800	280	23	13	0.91	
74/09/11	13 00		5.300	13.000	0.050	0.10GK	3.200	270	17	15	1.20	
74/10/09	14 15		5.500	8.300	0.030	0.10JK	5.900	300	22	20	1.00	
74/11/20	15 15		3.300	7.000	0.250	16.000	6.900	290	30	15	1.10	57
74/12/11	15 15		3.300	9.400	4.700	5.400	2.600	250	16	11	0.10K	
75/01/16	15 00		1.600	2.900	0.060	0.530	3.400	250	21	17	0.62	
75/02/25	14 20		2.700	6.900	38.000	3.500	2.300	310	37	11	1.10	
75/03/20	14 15		1.900	1.700	1.100	3.600	2.400	310	35	21	0.71	27
75/04/17	12 00		1.500	1.700	0.050	6.200	4.400	320	27	16	0.47	
75/05/15	13 15		4.200	11.000	0.220	2.400	3.800	368	31	24	1.10	
75/06/18	15 00		3.500	6.300	0.020	7.800	3.400	290	15	16	1.20	

STORET RETRIEVAL DATE 75/09/19
LAKE SUPERIOR TRIBUTARY CONTRACT
MUNICIPAL POINT SOURCES
24-HOUR COMPOSITES DONE QUARTERLY

0206 TH-STP
47 00 39.0 091 39 56.0
TWO HARBORS SEWAGE TREATMENT PLT
27 MINNESOTA
TWO HARBORS, MINNESOTA
FINAL EFFLUENT SAMPLE
21MINNS 2244440
2 0999 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	01027 CADMIUM CD,TOT UG/L	01067 NICKEL NI,TOTAL UG/L	01092 ZINC ZN,TOT UG/L	01051 LEAD PB,TOT UG/L	71900 MERCURY HG,TOTAL UG/L	01002 ARSENIC AS,TOT UG/L	01147 SELENIUM SE,TOT UG/L	01045 IRON FE,TOT UG/L	01055 MANGANESE MN UG/L	00910 CALCIUM CACO3 MG/L
73/12/20			10K	10K	160	17	0.3	10K	5K	930	13.0	47.0
74/02/05			10K	10K	110	10K	0.4	10K	5K	450	67.0	41.0
74/02/26	12 00											39.0
74/03/12	11 45											64.0
74/04/02	11 00											45.0
74/05/31	03 45		10K	10K	180	13	0.9	10K	2K	640	110.0	59.0
74/05/15	15 30											88.0
74/07/31	16 30		10K	10K	520	18	0.1	14	2K	970	75.0	56.0
74/08/13	13 15											62.0
74/09/11	13 00											50.0
74/10/09	15 15											50.0
74/11/20	15 15		12	10K	110	31	0.5	10K	2K	870	67.0	65.0
74/12/11	15 15											54.0
75/01/15	15 00											46.0
75/02/26	14 20											61.0
75/03/20	14 15		10K	10	170	17	0.4	10K	2	490	64.0	55.0
75/04/17	12 00											96.0
75/05/15	13 15											100.0
75/06/18	13 00											56.0

STORET RETRIEVAL DATE 75/07/10
LAKE SUPERIOR TRIBUTARY CONTRACT
MUNICIPAL POINT SOURCES
24-HOUR COMPOSITES JUNE QUARTERLY

0206 TH-STP
47 0C 38.0 091 37 56.6
TWO HARBORS SEWAGE TREATMENT PLT
27 MINNESOTA
TWO HARBORS, MINNESOTA
FINAL EFFLUENT SAMPLE
21MINNS 2244440
2 0999 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	00930 SODIUM NA,DISS MG/L	00935 POTASSIUM K,DISS MG/L	39504 AROCLOR 1254 UG/L	01501 ALPHA TOTAL PC/L	01502 ALPHA-T ERROR PC/L	03501 BETA TOTAL PC/L	03502 BETA-T ERROR PC/L	39370 DDT WHL SMP. UG/L	00720 CYANIDE CN-TOT MG/L
73/12/23			33.00	2.00		3K		14	3		3.900
74/02/05			35.00	15.00		3K		5	3		0.010
74/02/26	12 00		30.00	5.10							
74/03/12	11 45		30.00	7.00							
74/04/02	11 00		34.00	4.20		4	3	12	4		0.005K
74/04/01	07 45		14.00	7.00							
74/05/15	15 30		20.00	13.00		3K		4	3		0.005K
74/07/31	16 30		15.00	6.90							0.005K
74/08/15	13 15		17.00	4.40							
74/09/11	13 00		25.00	9.10							
74/10/09	16 15		50.00	7.50		3K		8	3		0.005K
74/11/20	15 15		27.00	8.80							
74/12/11	15 15		15.00	7.30							
75/01/16	15 00		13.00	4.70							
75/02/25	14 20		35.00	5.20		7	4	12	3		
75/03/20	14 15		19.00	4.50							
75/04/17	12 00		13.00	7.20							
75/05/15	13 15		20.00	5.50							
75/06/13	15 00		18.00	4.60							

STORET RETRIEVAL DATE 75/03/11
LAKE SUPERIOR TRIBUTARY CONTRACT
MUNICIPAL POINT SOURCES
24-HOUR COMPOSITES DONE QUARTERLY

0206 TH-STP
47 00 35.0 091 39 56.0
TWO HARBORS SEWAGE TREATMENT PLT
27 MINNESOTA
TWO HARBORS, MINNESOTA
FINAL EFFLUENT SAMPLE
21MINNS 2244440
2 0599 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	32730 PHENOLS TOTAL UG/L	01037 BARIUM BA,TOT UG/L	00550 OIL-GRSE TOT-SXLT MG/L	00955 SILICA DISOLVED MG/L	01034 CHROMIUM CR,TOT UG/L	74020 FLOW PUMP OUT MGD
73/12/20			110	30K	15.7			
74/01/29	11 30					6.5		1.50
74/02/05			60	45	28.8			1.60
74/02/26	12 00					6.3		1.40
74/03/12	11 45					8.8		1.60
74/04/02	11 00					6.9		2.50
74/05/01	09 45		25	29	8.2			2.60
74/05/15	13 30					10.0		2.60
74/06/13	11 15					8.0		2.10
74/07/31	16 30		150			5.6	4	2.30
74/08/13	10 15		3			5.9		2.00
74/09/11	13 00		37			5.5		1.90
74/10/07	16 15		34			6.8		1.60
74/11/20	15 15		34			7.2		1.80
74/12/11	15 15		14			4.5	5	2.00
75/01/16	15 00		8			7.5		1.50
75/02/26	14 20		3			5.3		1.30
75/03/20	14 15		43			4.6		0.95
75/04/17	12 00		9				3	1.10
75/05/15	13 15		30			9.2		1.80
75/06/18	15 00		22			5.6		0.80
								0.90

STORET RETRIEVAL DATE 75/09/18

022 MPCA026 BP-0.1
47 20 15.0 091 13 06.0
BAPTISM R. NEAR ILLGEN CITY
27 MINNESOTA
LAKE SUPERIOR BASIN
LAKE SUPERIOR BASIN IN MINNESOTA
21MINN 2111204
2 0559 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	00010 WATER TEMP CENT	00011 WATER TEMP FAHN	31505 TOT COLI MPN CONF /100ML	31615 FEC COLI MPNECMED /100ML	00500 RESIDUE TOTAL MG/L	00530 RESIDUE TOT NFLT MG/L	00515 RESIDUE DISS-105 C MG/L	00070 TURB JKSN JTU	00900 TOT HARD CACO3 MG/L	00410 T ALK CACO3 MG/L
73/07/25	08 45		16.7	62.0	1300	70		2		3.8	34	34
73/08/29	13 10		23.3	74.0	79	79		1		0.5		31
73/09/13	11 20		13.3	56.0	330	33		3		1.0	40	31
73/10/24	09 45		52.0	11.1	170	49		4		2.2	40	30
73/11/27	09 15		5.0	41.0	170	8		0.5<		0.5		20
73/11/19	09 00		0.6	33.0	460	49		2		2.0	30	22
73/12/05	10 00		0.0	32.0	49	23		2		1.4	21	21
74/01/24	09 00		0.0	32.0	220	79	73	5	68	1.2	32	45
74/02/27	10 30		0.0	32.0	490	17	74	5	79	1.1	43	42
74/03/13	09 20		0.0	32.0	210	14	82	2	81	0.1	60	48
74/04/03	09 00		0.0	32.0	2800	9	75	0.4	76	2.0	45	51
74/04/09	14 45		0.0	32.0	280	33	83	2	81	2.5	43	50
74/04/23	10 30		1.1	34.0	170	11	64	8	56	3.6	16	10
74/05/07	10 15		2.8	37.0	130	34	55	6	49	2.0	56	38
74/05/14	11 00		4.4	40.0	130	13	65	6	59	5.0	20	10K
74/05/19	15 00		16.7	62.0	540	33	61	1	60	1.1	22	24
74/07/10	10 30		19.4	67.0	1300	31	68	2	66	0.8	23	41
74/07/14	14 00		17.2	63.0	350	13	82	0.4	81	0.2	34	35
74/08/10	10 30		11.1	52.0	49	11	80	3	77	0.8	34	31
74/10/08	11 35		5.6	42.0	230	17	79	10	69	1.3	32	28
74/11/05	11 30		2.8	37.0	140	33	87	4	83	1.5	27	15
74/12/10	11 00		0.0	32.0	70	5	97	4	93	0.8	43	38
75/01/16	10 20		0.0	32.0	230	50	77	1	76	1.7	45	32
75/02/26	10 00		0.0	32.0	110	5	72	5	66	1.2	49	42
75/04/02	16 30		0.0	32.0	230	13	76	1	75	1.7	44	34
75/04/16	10 15		0.0	32.0	210	21	74	7	55	6.4	47	32
75/05/01	10 15		1.1	34.0	230	79	62	8	54	3.4	26	16
75/05/08	10 30		5.6	42.0	180	11	60	6	54	4.5	15	10K
75/05/15	10 25		8.3	47.0	490	11	54	5	49	1.7	23	14
75/05/22	10 00		15.6	60.0	110	23	67	1	66	2.3	27	18
75/06/18	11 00		15.0	59.0	700	13	83	1	82	1.4	22	23

STORET RETRIEVAL DATE 75/09/18

022 MPCA026 BP-0.1
47 20 15.0 091 13 05.0
BAPTISM R. NEAR ILLGEN CITY
27 MINNESOTA
LAKE SUPERIOR BASIN
LAKE SUPERIOR BASIN IN MINNESOTA
21MINN 2111204
2 0999 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	00400 PH SU	00300 DO MG/L	00310 BOD 5 DAY MG/L	00665 PHOS-TOT MG/L P	00610 NH3-N TOTAL MG/L	00615 NO2-N TOTAL MG/L	00620 NO3-N TOTAL MG/L	00605 ORG N N MG/L	00600 TOTAL N N MG/L	00095 CNDUCTVY AT 25C MICROMHO
73/07/23	09 45		7.40	9.9	0.8	0.030						62
73/08/29	13 10		7.90	8.2	0.5K	0.050	0.070	0.010	0.100K	0.670	0.75	63
73/08/13	11 20		7.20	11.0	0.5K	0.040	0.130	0.010K	0.160	0.700	1.00	67
73/09/26	09 45		7.50	10.5	0.5K	0.030	0.200	0.010K	0.140	0.760	1.12	64
73/10/17	09 15		7.20	12.8	0.5	0.010	0.050K	0.010	0.210	0.760	0.98	49
73/11/14	09 00		8.30	11.8	1.0	0.010	0.130	0.010	0.260	0.710	1.11	63
73/12/05	13 00		7.70	13.6	0.5K	0.010	0.120	0.010K	0.440	1.000	1.56	62
74/01/30	09 00		7.40	14.5	1.4	0.220	0.160	0.010K	0.470	0.430	1.06	98
74/02/27	13 30		7.20	13.1	1.0	0.020	0.080	0.010K	0.370	0.750	1.20	85
74/03/13	09 20		6.30	14.4	0.9	0.030	0.050K	0.010K	0.760	0.410	1.17	120
74/04/03	09 30		7.30	14.5	2.6	0.030		0.010K	0.550	0.590		97
74/04/24	14 15		7.40	13.1	0.5K	0.590	0.050K	0.010K	0.500	0.300	0.80	99
74/05/07	13 30		7.00	11.9	2.0	0.210	0.050K	0.030	0.660	1.100	1.79	51
74/05/21	10 15		8.20	11.2	2.0	0.030	0.050K	0.020	0.280	0.600	0.90	47
74/06/11	11 00		7.00	12.3	5.5	0.040	0.050K	0.020	0.470	0.830	1.31	43
74/06/18	13 00		7.40	9.5	0.8	0.010	0.150	0.010K	0.110	0.620	0.79	47
74/07/10	13 30		7.40	8.8	1.4	0.030	0.120	0.010	0.150	0.640	0.92	71
74/07/16	14 00		7.90	9.1	0.6	0.020	0.050K	0.050	0.900	0.360	1.31	78
74/08/13	13 30		8.10	10.3	1.1	0.040	0.150	0.050	0.470	0.230	0.81	96
74/09/03	11 35		7.10	12.8	0.9	0.010	0.050K	0.010	0.100K	0.050K	0.01	79
74/11/05	11 30		7.30	13.4	0.8	0.020	0.050K	0.030	0.370	0.620	1.02	62
74/12/10	11 00		7.20	14.4	0.8	0.140	0.050K	0.070	0.360	0.680	1.10	100
75/01/16	10 20		7.40	14.7	0.9	0.030	0.060	0.030	1.100	0.290	1.38	79
75/02/20	13 00		7.30	14.4	0.5K	0.020	0.050	0.020	0.620	0.480	1.18	93
75/03/12	10 30		7.60	14.9	0.5K	0.020	0.280	0.030	0.550	0.480	1.34	96
75/04/16	13 15		7.70	13.4	0.7	0.200	0.090	0.050	1.000	0.490	1.63	87
75/05/21	13 15		8.40	14.4	0.7	0.030	0.150	0.030	0.610	0.500	1.30	42
75/06/03	10 00		7.20	12.5	0.5	0.030	0.050K	0.030	0.460	1.100	1.59	33
75/07/15	13 25		8.30	11.4	1.1	0.010	0.050K	0.040	0.480	0.500	1.03	41
75/05/22	13 00		7.20	9.0	0.8	0.030	0.050K	0.020	0.100K	1.500	1.52	49
75/08/13	11 00		7.50	9.2	1.3	0.020	0.050K	0.020	0.100K	1.600	1.62	54

STORET RETRIEVAL DATE 75/09/18

022 MPCA026 BP-0.1
47 20 15.0 091 13 06.0
BAPTISM R. NEAR ILLGEN CITY
27 MINNESOTA
LAKE SUPERIOR BASIN
LAKE SUPERIOR BASIN IN MINNESOTA
21MINN 2111204
2 0999 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	00940 CHLORIDE CL MG/L	00945 SULFATE SO4-TOT MG/L	00950 FLUORIDE F,DISS MG/L	01042 COPPER CU,TOT UG/L	01027 CADMIUM CD,TOT UG/L	01067 NICKEL NI,TOTAL UG/L	01092 ZINC ZN,TOT UG/L	01051 LEAD PB,TOT UG/L	01045 IRON FE,TOT UG/L	01055 MANGNESE MN UG/L
73/07/25	08 45		2		0.20						750	10.0
73/08/21	13 10		1K		0.25	13	10K	10K	10K	10K	470	45.0
73/09/13	11 20		3		0.18	10K	10K	10K	10K	10K	690	10.0K
73/09/26	09 45		6	12	0.25	10K	10K	10K	13	10K	440	110.0
73/10/17	09 15		5								490	5.0K
73/11/14	09 00		2		0.20						410	5.0K
73/12/05	13 00		2		0.15	10K	10K	10K	10K			10.0K
74/01/30	09 00		3	11	0.16						300	5.0K
74/02/27	13 30		4	10	0.24	10K	10K	10K	19	10K	360	10.0K
74/03/13	09 20		6		0.22						300	5.0
74/04/30	09 00		3	10	0.20	10K	10K	10K	10K	10K	330	10.0K
74/04/09	14 15		3	11	0.23	10K	10K	10K	16	10K	380	5.0K
74/04/23	10 30		4	7	0.14	10K	10K	10K	10K	10K	1100	40.0
74/05/07	13 15		21	12	0.21	10K	10K	10K	10K	10K	320	5.0K
74/05/14	11 00		32	15	0.10K	10K	10K	10K	16	10K	980	19.0
74/06/19	15 00		1K	5K	0.18	10K	10K	10K	14	10K	220	24.0
74/07/10	13 30		1	8	0.21	10K	10K	10K	10K	10K	260	21.0
74/08/14	14 00		2	5K	0.24	10K	10K	10K	10K	10K	190	27.0
74/09/13	13 30		4	5	0.20	10K	10K	10K	18	10K	220	31.0
74/10/31	11 30		4	9	0.21	10	10K	10K	10K	10K	370	10.0K
74/11/05	11 30		5	9	0.22	10K	10K	13	19	10K	380	10.0K
74/12/10	11 00		5	8	0.21	10K	10K	10K	10K	10K	260	24.0
75/01/16	13 20		3	11	0.16	10K	10K	10K	38	10K	360	10.0K
75/02/20	10 30		4	9	0.23	10K	10K	10K	12	10K	220	12.0
75/04/02	15 30		5	10	0.24	10K	10K	10K	15	10K	240	10.0K
75/04/16	10 15		9	8	0.12	10K	10K	11	29	11	520	10.0K
75/05/01	13 15		2	9	0.11	10K	10K	10K	24	10K	760	76.0
75/05/13	10 00		1	9	0.12	10K	10K	15	33	10K	450	10.0K
75/05/15	13 25		2	9	0.12	10K	10K	10K	51	10K	260	10.0K
75/05/22	10 00		5	9	0.16	10K	10K	10K	110	10K	230	220.0
75/06/13	11 00		2	5K	0.21	10K	10K	10K	37	10K	260	10.0K

STORET RETRIEVAL DATE 75/09/15

022 MPCA026 BP-3.1
47 20 15.0 091 13 06.0
BAPTISM R. NEAR ILLGEN CITY
27 MINNESOTA
LAKE SUPERIOR BASIN
LAKE SUPERIOR BASIN IN MINNESOTA
21MINN 2111204
2 0999 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	00910 CALCIUM CA,DISS MG/L	00930 SODIUM NA,DISS MG/L	00935 POTASSIUM K,DISS MG/L	32730 PHENOLS TOTAL UG/L	00955 SILICA DISSOLVED MG/L	00061 STREAM FLOW, INST-CFS
73/07/25	08 45		13.0	4.00	1.00K	5	9.9	137
73/08/29	13 10		30.0	4.00	1.00K	2K	12.0	64
73/09/13	11 20		24.0	2.00	1.00K	3	12.0	59
73/10/25	08 45		28.0	4.00	1.00K	2K	11.0	337
73/10/17	09 15					2K	12.0	372
73/11/14	09 00					2K	13.0	164
73/12/05	10 00		15.0	4.50	0.53	2K	13.0	60
74/01/30	09 00		25.0	4.30	2.00	11	15.0	51
74/02/27	10 30		35.0	6.90	1.00K	2K	16.0	25
74/03/13	09 20		28.0	5.40	0.70	3	17.0	35
74/04/03	09 00		44.0	6.10	1.20	3	16.0	31
74/04/09	14 15		39.0	10.00	3.10	9	16.0	32
74/04/23	10 40		13.0	1.90	1.90	2K	8.9	1142
74/05/07	10 15		42.0	9.00	2.00	3	8.2	249
74/05/14	11 00		100.0	230.00	15.00	2K	8.9	1012
74/05/15	13 00		14.0	2.00	1.00K	3	7.6	137
74/07/10	13 30		24.0	2.40	1.80	2K	7.9	52
74/08/14	14 00		25.0	2.50	1.20	7	6.5	31
74/09/10	13 30		26.0	3.70	1.00K	3	6.0	31
74/10/03	11 35		26.0	5.60	1.00K	4	9.2	90
74/11/05	11 30		15.0	3.00	1.00K	9	9.4	55
74/12/10	11 00		35.0	4.50	1.20	2K	13.0	61
75/01/16	13 20		27.0	3.40	1.00K	3	14.0	264
75/02/25	10 00		42.0	5.20	1.00K	2K	14.0	30
75/04/02	15 30		25.0	4.00	1.00K	2K	10.0	42
75/04/16	10 15		30.0	3.70	1.00K			1420
75/05/01	10 15		18.0	1.20	0.50	4	9.2	1540
75/05/06	10 00		10.0	0.80	0.70	13	7.4	1059
75/05/15	10 25		11.0	1.10	0.50K	10	7.6	579
75/05/22	13 30		15.0	1.80	0.80	2K	4.9	255
75/05/28	11 00		16.0	2.30	0.60	8	6.3	120

STORET RETRIEVAL DATE 75/10/15

022 MPCA026 BP-0.1
47 20 16.0 091 13 06.0
BAPTISM R. NEAR ILLGEN CITY
27 MINNESOTA
LAKE SUPERIOR BASIN
LAKE SUPERIOR BASIN IN MINNESOTA
21MINN 2111204
2 0999 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	00720 CYANIDE CN-TOT MG/L	00335 COD LOWLEVEL MG/L	00680 T ORG C C MG/L	01002 ARSENIC AS,TOT UG/L	01007 BARIUM BA,TOT UG/L	01034 CHROMIUM CR,TOT UG/L	71900 MERCURY HG,TOTAL UG/L	01147 SELENIUM SE,TOT UG/L	00920 MGNSIUM CACO3 MG/L
73/08/29	13	10			16.8						
73/09/13	11	20			25.5				0.1K		
73/09/26	09	45	0.005K	69.0	19.6	10K	20K	2K	0.3	2K	12.0
73/10/17	09	15			26.1				0.2		
74/02/27	10	30	0.005K	50.0K		10K	20K	3	0.1	2K	10.0K
74/03/13	09	20			5.6						
74/04/05	14	15			4.5						
74/04/23	10	30	0.005K	50.0K	8.0	10K	10K	2K	0.5	2K	3.0
74/05/07	10	15			8.5						
74/05/14	11	00			9.0						
74/06/19	15	00			8.5						
74/09/10	10	30	0.005K	50.0K		10K	15K	2K	0.2	2K	8.0
75/02/26	10	00	0.005K	26.0	14.0	10K	15K	2	0.1K	2K	7.0
75/05/01	10	15	0.005K	39.0	15.0	10K	15K	1	0.1	2K	8.0

STORET RETRIEVAL DATE 75/09/18

[illegible]

DATE FROM TO	TIME OF DAY	DEPTH FEET	03501 BETA TOTAL PC/L	03502 BETA-T ERROR PC/L	07000 H-3 TOTAL PC/L	07001 H-3,TOTL ERROR PC/L	13501 SR-90 TOTAL PC/L	13502 SR-90 ERROR PC/L	39501 AA-228 TOTAL PC/L	39502 AA-228 ERROR PC/L	39370 DRY WHL SMPL UG/L	00590 DIL-OPSE TOT-SELT MG/L
73/09/26	09 45		4	2	580.0	340.0	0.0	0.2	10.0K		0.010K	0.5K
74/02/27	10 30		4	3	830.0	170.0	0.4	0.2	11.0K		0.050K	7.3
74/04/23	10 30		4	4	440.0	180.0	0.3	0.2	19.0K		0.100K	0.5K
74/09/10	10 30		4K		440.0	170.0	0.2	0.2	2.0K			0.8
75/02/26	10 00		3	3	300.0	180.0	0.7	0.2	2.0K		0.010K	0.7
75/05/01	10 15		5	3	400.0	190.0	0.0	0.2	2.0K		0.010K	0.5K

STORET RETRIEVAL DATE 75/09/18

021 MPCA025 SV-4
47 15 15.0 091 17 45.0
BEAVER R. NEAR SILVER BAY
27 MINNESOTA
LAKE SUPERIOR BASIN
LAKE SUPERIOR BASIN IN MINNESOTA
21MINN 2111204
2 0999 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	00010 WATER TEMP CENT	00011 WATER TEMP FAHN	31505 TOT COLI MPN CONF /100ML	31615 FEC COLI MPNECMED /100ML	00500 RESIDUE TOTAL MG/L	00530 RESIDUE TOT NFLT MG/L	00515 RESIDUE DISS-105 C MG/L	00070 TURB JKSN JTU	00900 TOT HARD CACO3 MG/L	00410 T ALK CACO3 MG/L
73/07/24	14 30		18.3	65.0	2200	1100		4		7.8	39	50
73/08/29	12 20		23.3	74.0	790	8		5		3.8		50
73/09/18	09 40		13.9	57.0	110	17		5		4.5	62	40
73/09/26	08 45		12.2	54.0	790	70		4		5.3	46	40
73/10/17	08 30		4.0	39.0	170	5		2		2.7		40
73/11/14	08 30		0.6	33.0	1300	34		3		3.9	41	40
73/12/05	09 15		0.0	32.0	170	11		2		3.9	27	56
74/01/21	15 45		0.6	33.0	27	23	66	3	63	3.4	54	61
74/02/26	15 45		0.0	32.0	350	33	95	4	91	3.9	77	55
74/03/12	15 30		0.0	32.0	350	6	90	6	84	4.8	55	62
74/04/02	13 15		0.0	32.0	140	40	96	0.4	96	4.5	61	66
74/04/09	15 00		0.0	32.0	490	33	95	4	92	5.0	53	50
74/04/24	10 45		1.7	35.0	36	6	62	16	46	10.0	15	10K
74/05/08	11 30		5.0	41.0	79	49	59	4	55	4.0	25	14
74/05/15	12 00		8.3	38.0	230	22	63	18	45	5.5	12	10K
74/06/13	13 45		12.8	55.0	330	110	80	2	78	3.6	32	25
74/07/10	11 50		21.1	70.0	330	110	62	6	56	8.2	57	85
74/08/13	12 30		19.4	67.0	700	49	110	4	106	7.0	57	51
74/09/12	10 15		11.7	53.0	700	49	100	5	95	4.5	55	46
74/10/09	15 00		7.8	46.0	110	23	100	4	96	4.2	49	60
74/11/05	10 30		2.8	37.0	230	23	98	6	92	7.4	35	27
74/12/11	11 30		0.0	32.0	49	2	110	4	106	4.5	69	64
75/01/15	12 00		0.0	32.0	1700	90	95	6	89	9.8	62	41
75/02/26	11 30		0.0	32.0	230	79	97	6	91	3.3	57	59
75/04/02	15 15		0.0	32.0	110	5	94	0.5K	94	5.8	64	52
75/04/17	10 20		0.0	32.0	1300	11	98	13	85	18.0	41	27
75/05/01	11 15		1.1	34.0	130	49	66	3	63	7.7	27	18
75/05/08	10 30		5.6	42.0	330	5	67	4	63	8.0	21	10
75/05/15	11 15		8.3	47.0	1300	13	63	5	57	4.3	25	18
75/05/22	10 30		17.8	64.0	230	9	75	2	71	3.4	38	30
75/06/18	12 30		17.2	63.0	330	33	94	3	91	4.7	34	37

STORET RETRIEVAL DATE 75/09/13

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021 MPCA025 BV-4
47 15 15.0 091 17 45.0
BEAVER R. NEAR SILVER BAY
27 MINNESOTA
LAKE SUPERIOR BASIN
LAKE SUPERIOR BASIN IN MINNESOTA
21MINN 2111204
2 0999 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	00400 PH SU	00300 DO MG/L	00310 BOD 5 DAY MG/L	00665 PHOS-TOT MG/L P	00610 NH3-N TOTAL MG/L	00615 NO2-N TOTAL MG/L	00620 NO3-N TOTAL MG/L	00605 ORG N N MG/L	00600 TOTAL N N MG/L	00095 CNDUCTVY AT 25C MICROMHO
73/07/24	14 30		7.90	8.4	0.6	0.030						89
73/08/22	12 20		8.00	8.0	0.6	0.060	0.070	0.010	0.100K	0.920	0.90	79
73/09/13	09 40		7.60	10.2	0.5K	0.150	0.180	0.010	0.170	0.910	1.20	97
73/09/26	08 45		7.40	9.7	0.6	0.030	0.220	0.010K	0.130	0.940	1.19	91
73/10/17	08 30		7.20	12.1	0.5K	0.190	0.050K	0.010	0.170	0.930	1.01	63
73/11/14	08 30		6.60	13.5	2.6	0.040	0.290	0.010	0.120	1.200	1.62	81
73/12/03	09 15		7.40	13.1	0.5	0.030	0.080	0.010	0.200	0.560	0.85	75
74/01/29	15 45		7.70	14.1	1.2	0.060	0.110	0.010	0.220	0.430	0.77	110
74/02/25	15 45		7.30	16.2	0.5K	0.030	0.060	0.010K	0.320	0.620	1.00	130
74/03/12	15 30		7.70	14.5	0.5K	0.040	0.050K	0.010	0.580	0.540	1.13	110
74/04/02	15 15		7.70	14.3	0.7	0.040	0.140	0.010	0.410	0.370	0.93	110
74/04/[illegible]	13 00		7.70	14.9	0.5K	0.040	0.050K	0.010	0.310	0.460	0.75	110
74/04/24	10 45		7.10	13.5	1.4	0.040	0.050K	0.010	0.190	0.720	0.92	39
74/05/08	11 30		7.70	11.6	2.2	0.010K	0.050K	0.010	0.100K	0.670	0.66	46
74/05/15	12 30		6.60	11.5	0.8	0.050	0.050K	0.020	0.170	0.590	0.69	41
74/05/18	13 45		7.70	10.0	1.7	0.040	0.360	0.010	0.130	0.720	1.25	60
74/07/10	11 30		7.80	8.7	1.6	0.030	0.300	0.010	0.150	0.750	1.21	110
74/08/13	12 30		8.00	9.1	0.9	0.040	0.050K	0.050	0.400	0.450	0.90	110
74/09/12	10 15		7.60	9.5	0.5	0.110	0.150	0.020	0.100K	0.600	0.77	120
74/10/08	15 00		7.20	12.4	0.8	0.020	0.050K	0.010	0.100K	0.530	0.54	130
74/11/05	10 30		7.30	12.9	0.6	0.030	0.050K	0.030	0.250	0.560	0.84	86
74/12/11	11 30		7.30	13.4	0.5K	0.060	0.530	0.040	0.210	0.450	1.63	130
75/01/15	12 00		7.30	13.0	1.5	0.050	0.060	0.030	1.000	0.560	1.65	100
75/02/26	11 30		7.80	14.0	0.5K	0.020	0.050K	0.020	0.490	0.420	0.93	120
75/04/02	15 15		7.50	13.2	0.5K	0.170	0.210	0.020	0.340	0.530	1.10	110
75/04/17	10 20		8.90	12.4	1.0	0.070	0.060	0.030	0.030	0.640	1.38	69
75/05/01	11 15		8.70	13.4	0.6	0.030	0.050K	0.030	0.280	0.410	0.72	47
75/05/08	10 30		7.20	10.9	0.6	0.030	0.050	0.030	0.100	0.610	0.79	38
75/05/15	11 15		6.90	11.0	0.9	0.020	0.050K	0.040	0.100K	0.530	0.57	48
75/05/22	10 30		7.10	9.1	0.8	0.020	0.050	0.010	0.100K	0.750	0.81	64
75/05/16	12 30		7.50	9.5	1.0	0.030	0.050K	0.020	0.100K	1.600	1.62	69

STORET RETRIEVAL DATE 75/09/18

021 MPCA025 BV-4
47 15 16.0 091 17 45.0
BEAVER R. NEAR SILVER BAY
27 MINNESOTA
LAKE SUPERIOR BASIN
LAKE SUPERIOR BASIN IN MINNESOTA
21MINN 2111204
2 0999 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	00940 CHLORIDE CL MG/L	00945 SULFATE SO4-TOT MG/L	00950 FLUORIDE F,DISS MG/L	01042 COPPER CU,TOT UG/L	01027 CADMIUM CD,TOT UG/L	01067 NICKEL NI,TOTAL UG/L	01092 ZINC ZN,TOT UG/L	01051 LEAD PB,TOT UG/L	01045 IRON FE,TOT UG/L	01055 MANGNESE MN UG/L
73/07/24	14 30		3		0.10						190	27.0
73/08/29	12 20		1K		0.21	10K	10K	10K	22	10K	1400	120.0
73/09/15	09 40		10		0.14	10K	10K	10K	10K	10K	1200	10.0K
73/09/26	08 45		6	6	0.19	13	10K	10K	380	10K	1100	13.0
73/10/17	08 30		3								980	10.0
73/11/14	08 30		2		0.14						870	20.0
74/12/30	09 15		3		0.11	10K	10K	10K	10K	10K	380	10.0K
74/01/29	15 45		2	11	0.11						1200	20.0
74/02/26	15 45		1	12	0.10	10K	10K	10K	10K	10K	1100	10.0K
74/03/12	15 30		3		0.14						530	5.0K
74/04/02	13 15		2	10	0.15							
74/04/09	13 00		2	12	0.14	10K	10K	10K	20	10K	910	9.0
74/04/24	10 45		5	5K	0.10	10K	10K	10K	23	10K	1600	27.0
74/05/08	11 30		5	11	0.11	10K	10K	10K	10K	10K	520	13.0
74/05/15	12 00		1	6	0.10	10K	10K	10K	16	10K	730	10.0K
74/05/19	13 45		4	12	0.12	10K	10K	10K	10K	10K	580	21.0
74/07/10	11 50		5	9	0.17	10K	10K	10K	14	10K	700	19.0
74/08/13	12 30		7	5K	0.15	10K	10K	15	34	10K	1000	10.0K
74/09/12	13 15		5	5K	0.17	10K	10K	10K	10K	10K	680	10.0
74/10/09	15 00		2	5K	0.16	10K	10K	10K	10K	10K	960	10.0K
74/11/05	10 30		5	11	0.16	10K	10K	11	10K	10K	1000	10.0K
74/12/11	11 30		3	9	0.14	10K	10K	10K	10K	10K	1000	24.0
75/01/15	12 00		4	13	0.10	10K	10K	10K	38	10K	94	24.0
75/02/26	11 30		3	9	0.15	10K	10K	10K	11	10K	650	48.0
75/04/02	15 15		4	10	0.17	10	10K	10K	16	10K	760	10.0K
75/04/17	10 20		6	9	0.10K	10K	10K	10	11	10K	1400	52.0
75/05/01	11 15		2	9	0.09	10K	10K	10K	24	10K	890	55.0
75/05/08	10 30		1	8	0.56	10	10K	37	48	10K	2600	10.0K
75/05/15	11 15		5	8	0.38	10	10K	10K	120	19	680	10.0K
75/05/22	10 30		4	11	0.13	10K	10K	10K	67	10K	520	45.0
75/06/18	12 30		1	5K	0.18	10K	10K	10K	10K	10K	420	10.0K

STORET RETRIEVAL DATE 75/09/18

021 MPCA025 RV-4
47 15 15.0 091 17 45.0
BEAVER R. NEAR SILVER BAY
27 MINNESOTA
LAKE SUPERIOR BASIN
LAKE SUPERIOR BASIN IN MINNESOTA
21MINN 2111204
2 0999 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	00915 CALCIUM CACO3 MG/L	00930 SODIUM NA,DISS MG/L	00935 POTSSIUM K,DISS MG/L	32730 PHENOLS TOTAL UG/L	00955 SILICA DISOLVED MG/L	00061 STREAM FLOW, INST-CFS
73/07/24	14 30		27.0	4.00	1.00K	8	9.0	50
73/08/21	12 20		39.0	3.00	1.00K	4	11.0	101
73/09/18	09 40		30.0	2.00	1.00K	4	13.0	93
73/09/20	08 45		32.0	3.00	1.00K	2	9.6	38
73/10/17	08 30					2K	11.0	119
73/11/14	08 50		28.0	3.00	3.00	4	11.0	38
73/12/05	08 15		20.0	5.30		5	12.0	30
74/01/24	15 45		36.0	5.00	1.00	2K	15.0	24
74/02/26	15 45		33.0	5.10	1.00K	2K	16.0	21
74/03/12	15 30		37.0	5.30	1.00K	2K	16.0	11
74/04/02	13 15		35.0	6.30	1.00K	15	15.0	25
74/04/09	13 00		43.0	7.90	1.70	9	15.0	29
74/04/24	10 45		10.0	1.50	1.00K	2	8.5	811
74/05/05	11 30		13.0	1.30	1.10	2K	3.6	145
74/05/15	12 00		10.0K	1.70	1.00K	2K	7.1	770
74/06/10	13 45		23.0	3.10	1.40	2K	5.0	218
74/07/10	11 50		45.0	2.20	1.40	10	6.8	6
74/08/13	12 30		43.0	2.20	1.00K	9	6.5	37
74/09/12	10 15		47.0	4.70	1.00K	2	5.4	48
74/10/07	13 00		33.0	0.10	1.30	2K	9.1	74
74/11/05	10 30		21.0	0.60	2.40	11	8.7	50
74/12/11	11 30		48.0	3.50	1.00K	2K	11.0	54
75/01/16	12 00		27.0	1.40	1.00	2K	12.0	66
75/02/26	11 30		47.0	7.40	1.00K	4	14.0	27
75/04/02	13 15		36.0	3.60	1.00K	2K	11.0	35
75/04/17	13 20		24.0	1.60	1.00K	6		233
75/05/01	11 15		15.0	0.60	0.50	2	7.2	1200
75/05/08	10 30		12.0	0.80	0.40	2K	6.3	948
75/05/15	11 15		15.0	1.20	0.50K	8	4.1	518
75/05/22	10 30		22.0	2.00	0.80	7	3.6	211
75/06/18	12 30		24.0	2.30	0.50	2	4.9	137

STORET RETRIEVAL DATE 75/10/15

021 MPCA025 BV-4
47 15 16.0 091 17 45.0
BEAVER R. NEAR SILVER BAY
27 MINNESOTA
LAKE SUPERIOR BASIN
LAKE SUPERIOR BASIN IN MINN-SOTA
21MINN 2111204
2 0999 FEET DEPTH

DATE FROM TO	TIME	DEPTH DAY	FEET	00720 CYANIDE CN-TOT MG/L	00335 COD LOW LEVEL MG/L	00690 TOTAL C MG/L	01002 ARSENIC AS,TOT UG/L	01007 BARIUM BA,TOT UG/L	01034 CHROMIUM CR,TOT UG/L	71900 MERCURY HG,TOTAL UG/L	01147 SELENIUM SE,TOT UG/L	00920 MAGNESIUM CACO3 MG/L
73/09/13	09 40					28.2				0.1K		
73/06/26	08 45			0.005K	28.0	21.0	10K	20K	8	0.1K	2K	10.0K
73/10/17	08 30					26.2				0.3		
74/02/26	15 45			0.005K	50.0K		10K	20K	2	0.2	2K	10.0K
74/03/12	15 30					7.4						
74/04/09	13 00					10.5						
74/04/24	10 45			0.005K	50.0K		10K	10K	2K	0.6	2K	6.0
74/05/06	11 30					5.5						
74/05/15	12 30					16.5						
74/05/18	13 45					12.2						
74/04/12	10 15			0.005K	50.0K		10K	15K	2K	0.1K	2K	8.0
75/02/26	11 30			0.005K	25.0	10.0	10K	15K	1	0.1K	2K	10.0
75/05/01	11 15			0.005K	32.0	15.0	10K	15K	1	0.1K	2K	9.0

STORET RETRIEVAL DATE 75/09/18

021 MPCA025 BV-4
47 15 16.0 091 17 45.0
BEAVER R. NEAR SILVER BAY
27 MINNESOTA
LAKE SUPERIOR BASIN
LAKE SUPERIOR BASIN IN MINNESOTA
21MINN 2111204
2 0999 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	03501 BETA TOTAL PC/L	03502 BETA-T ERROR PC/L	07000 H-3 TOTAL PC/L	07001 H-3,TOTL ERROR PC/L	13501 SR-90 TOTAL PC/L	13502 SR-90 ERROR PC/L	09501 RA-226 TOTAL PC/L	09502 RA-226 ERROR PC/L	39370 DDT WHL SMPL UG/L	00550 OIL-GRSF TOT-SXLT MG/L
73/09/26	08 45		4	2	320.0	250.0	1.0	0.2	11.0K		0.010K	0.5K
74/02/26	15 45		3K		540.0	170.0	0.8	0.2	11.0K		0.050K	1.5
74/04/24	10 45		4K		190.0K		0.6	0.2	11.0K		0.100K	0.7
74/09/12	10 15		3K		760.0	170.0	0.9	0.2	2.0K			0.5K
75/02/26	11 30		3	3	190.0	180.0	0.7	0.2	3.0K		0.010K	0.7
75/05/01	11 15		4	3	360.0	180.0	0.4	0.2	2.0K		0.010K	0.5K

STORET RETRIEVAL DATE 75/09/13

028 MPCA032 PRO-0.4
47 49 12.0 090 03 03.0
BRULE R. NEAR HOVLAND
27 MINNESOTA
LAKE SUPERIOR BASIN
LAKE SUPERIOR BASIN IN MINNESOTA
21MINN 2111204
2 0999 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	00010 WATER TEMP CENT	00011 WATER TEMP FAHN	31505 TOT COLI MPN CONF /100ML	31615 FEC COLI MPNECMFD /100ML	00500 RESIDUE TOTAL MG/L	00530 RESIDUE TOT NFLT MG/L	00515 RESIDUE DISS-105 C MG/L	00070 TURB JKSN JTU	00900 TOT HARD CACO3 MG/L	00410 T ALK CACO3 MG/L
73/07/25	14 00		22.2	72.0	260	20K		1		0.5	21	16
73/08/30	11 00		21.1	70.0	490	14		0.5K		1.5	24	17
73/09/13	14 30		15.5	60.0	23	5		3		1.4	29	17
73/09/27	11 15		11.1	52.0	170	50		1		4.0	28	23
73/10/16	11 30		6.0	42.8	70	20K		1		1.3	14	10
73/11/15	11 15		0.0	32.0	70	2K		0.5K		2.0	15	16
73/12/21	10 30		0.0	32.0	50	20K		3	55	1.1	20	15
74/01/31	12 45		0.0	32.0	23	2K	45	0.4	45	1.0	17	24
74/02/23	12 00		0.0	32.0	49	5	40	0.4	40	1.3	19	29
74/03/15	15 15		0.0	32.0	49	5	41	2	39	0.1	16	13
74/04/03	15 30		0.0	32.0	22	2K	41	0.4	41	1.6	19	16
74/04/10	10 45		0.6	33.0	34	2K	46	0.4	46	1.5	18	13
74/04/23	16 15		0.6	33.0	170	9	79	27	52	10.0	14	10K
74/05/07	15 45		5.0	41.0	70	2	44	1	44	2.0	12	10K
74/05/14	15 00		4.4	40.0	79	2	41	6	35	5.0	12	10K
74/06/19	11 00		14.4	58.0	140	7	45	1	47	2.0	6	7
74/07/09	15 45		25.0	77.0	1100	5	42	4	39	1.5	17	23
74/08/14	09 30		17.2	63.0	33	2	53	1	52	0.2K	20	16
74/09/11	15 45		12.2	54.0	700	470	70	15	54	15.0	19	10K
74/10/07	15 15		5.0	41.0	49	17	52	2	50	1.7	19	20
74/11/06	09 45		1.7	35.0	49	11	52	2	50	1.3	15	15
74/12/10	15 15		0.0	32.0	70	2	50	4	46	4.6	21	19
75/01/15	16 45		0.0	32.0	490	20K	61	2	59	6.7	18	12
75/02/25	15 15		0.0	32.0	17	2	48	0.5K	45	1.4	29	19
75/04/03	10 45		0.0	32.0	49	2K	28	0.5K	28	2.5	25	22
75/04/16	15 30		0.6	33.0	700	2K	53	3	50	11.0	26	19
75/04/30	15 45		2.9	37.0	95	2	51	0.5K	51	3.9	20	15
75/05/07	14 30		7.2	45.0	22	2K	46	2	44	2.2	15	10K
75/05/14	15 00		11.7	53.0	46	5	42	1	41	1.9	24	21
75/05/21	12 00		16.7	62.0	126	11	47	2	45	1.6	13	13
75/06/17	14 45		17.8	64.0	95	17	42	1	41	1.6	18	15

STORET RETRIEVAL DATE 75/06/18

028 MPCA032 R&U-0.4
47 49 12.0 090 03 03.0
BRULE R. NEAR ROWLAND
27 MINNESOTA
LAKE SUPERIOR BASIN
LAKE SUPERIOR BASIN IN MINNESOTA
21MINN 2111204
2 0999 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	00400 PH SU	00300 DO MG/L	00310 BOD 5 DAY MG/L	00665 PHOS-TOT MG/L P	00610 NH3-N TOTAL MG/L	00615 NO2-N TOTAL MG/L	00620 NO3-N TOTAL MG/L	00605 ORG N MG/L	00600 TOTAL N MG/L	00095 CNDUCTVY AT 25C MICROMHO
75/04/23	14 00		7.00	7.2	3.6	0.320						34
75/04/30	11 00		6.90	8.1	0.5K	0.020	0.070	0.010	0.100K	0.530	0.61	41
75/05/13	11 30		6.80	9.7	2.0	0.020	0.050K	0.010	0.100K	0.560	0.57	41
75/05/27	11 15		7.30	10.4	0.8	0.030	0.120	0.010	0.100	0.590	0.92	43
75/06/10	11 00		7.50	12.1	1.8	0.030	0.050K	0.050	0.100K	0.780	0.94	42
75/06/19	11 15		7.10	11.7	3.6	0.070	0.330	0.010K	0.140	0.640	1.10	47
75/07/01	13 30		7.30	10.0	0.5	0.040	0.050K	0.010	0.090	0.690	0.79	53
75/07/31	12 45		7.50	10.5	0.8	0.070	0.140	0.010K	0.170	0.390	0.66	45
75/08/26	12 00		7.30	10.4	1.3	0.050	0.190	0.010K	0.190	0.500	0.98	53
75/09/15	13 15		6.80	10.4	0.5K	0.020	0.050K	0.010K	0.370	0.360	0.75	52
75/09/23	15 30		7.30	10.9	1.5	0.020	0.150	0.010K	0.220	0.310	0.63	46
75/09/15	13 45		7.40	10.0	0.5K	0.010K	0.050K	0.010	0.240	0.300	0.55	46
75/10/23	10 15		7.00	10.4	3.2	0.120	0.050K	0.050	0.330	0.910	1.27	35
75/09/07	13 45		7.50	13.6	1.4	0.010K	0.050K	0.010K	0.120	0.580	0.70	29
75/05/14	15 00		7.00	11.9	2.8	0.040	0.050K	0.010	0.190	0.640	0.84	30
75/08/19	11 30		7.30	9.5	0.5	0.020	1.100	0.010K	0.100K	0.540	1.65	33
75/07/01	13 45		7.20	7.8	0.5K	0.110	0.310	0.010	0.110	0.390	0.51	39
75/11/14	09 30		7.30	9.6	3.4	0.030	0.050K	0.050	0.150	0.330	0.55	49
75/09/11	13 45		7.40	10.0	1.1	0.060	0.210	0.020	0.260	1.000	1.49	49
75/10/31	13 15		7.80	12.8	1.3	0.020	0.050K	0.010	0.100	0.420	0.59	43
75/11/26	09 45		6.80	13.1	0.5K	0.020	0.050K	0.020	0.100K	0.230	0.22	42
75/12/10	13 15		7.40	13.3	0.7	0.010	0.050K	0.060	0.340	0.420	0.84	44
75/01/15	13 45		7.40	14.3	0.5K	0.030	0.050K	0.030	0.540	0.410	0.98	47
75/02/25	14 15		7.50	14.2	0.7	0.020	0.050K	0.010	0.290	0.390	0.69	41
75/03/03	13 45		7.10	14.2	1.2	0.020	0.290	0.020	0.190	0.500	1.00	46
75/03/18	13 30		7.40	12.9	1.2	0.050	0.030	0.040	0.450	0.430	1.01	49
75/03/30	13 45		7.00	13.8	1.3	0.020	0.050	0.030	0.200	0.410	0.69	30
75/03/07	14 30		7.40	12.5	1.3	0.020	0.050K	0.030	0.190	0.380	0.60	28
75/05/14	13 00		7.70	10.7	1.0	0.020	0.050K	0.030	0.100	0.390	0.52	49
75/03/21	12 00		7.30	9.3	0.9	0.010	0.050K	0.010	0.100K	0.400	0.41	35
75/05/17	14 45		7.50	9.0	1.1	0.020	0.060	0.020	0.100K	0.530	0.58	37

STORET RETRIEVAL DATE 75/09/15

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028 MPCA032 BRJ-0.4
47 49 12.0 090 03 03.0
BRULE R. NEAR HOVLAND
27 MINNESOTA
LAKE SUPERIOR BASIN
LAKE SUPERIOR BASIN IN MINNESOTA
21MINN 2111204
2 0999 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	00940 CHLORIDE CL MG/L	00945 SULFATE SO4-TOT MG/L	00950 FLUORIDE F,DISS MG/L	01042 COPPER CU,TOT UG/L	01027 CADMIUM CD,TOT UG/L	01067 NICKEL NI,TOTAL UG/L	01092 ZINC ZN,TOT UG/L	01051 LEAD PB,TOT UG/L	01045 IRON FE,TOT UG/L	01055 MANGNESE MN UG/L
73/07/25	14 00		2		0.10						250	10.0K
73/08/30	11 00		3		0.18	10K	10K	17	10K	10K	545	10.0K
73/09/13	13 30		3		0.10K	10K	10K	10K	10K	10K	790	10.0K
73/09/27	11 15		5	67	0.16	10K	10K	10K	13	10K	530	43.0
73/10/18	11 00		2		0.11	10K	10K	10K	11	10K	500	19.0
73/11/15	11 15		2		0.15						430	10.0
73/12/21	10 30		3	11	0.15	10K	10K	10K	10K	10K	370	16.0
74/01/31	12 45		1K	12	0.11						330	10.0
74/02/28	12 00		3	10	0.16	10K	10K	10K	11	10K	300	10.0K
74/03/13	15 15		1	11	0.13						330	5.0K
74/04/03	15 30		2	11	0.13	17	10K	10K	230	10K	300	10.0K
74/04/10	10 45		2	11	0.22	10K	10K	10K	11	10K	370	5.0K
74/04/23	16 15		6	5	0.12	10K	10K	10K	11	10K	2000	100.0
74/05/07	15 45		4	11	0.14	10K	10K	10K	10K	10K	310	9.0
74/05/14	15 00		1	14	0.12	10K	10K	10K	11	10K	890	10.0K
74/06/19	11 00		1	5K	0.10K	10K	10K	10K	27	10K	300	32.0
74/07/09	15 45		1K	5K	0.14	10K	10K	10K	15	10K	320	140.0
74/08/14	09 30		3	5K	0.14	10K	10K	10K	19	10K	320	10.0K
74/09/11	10 45		6	9	0.23	10K	10K	10K	27	10K	2100	10.0K
74/10/09	10 15		3	5K	0.13	10K	10K	10K	10K	10K	450	17.0
74/11/05	03 45		2	5K	0.16	10K	10K	10K	10K	10K	530	10.0K
74/12/10	15 15		2	5K	0.14	10K	10K	10K	10K	15	450	10.0K
75/01/15	15 45		3	9	0.12	10K	10K	10K	34	10K	420	10.0K
75/02/25	15 15		4	8	0.16	10K	10K	10K	10K	10K	200	15.0
75/04/03	10 45		2	4	0.14	10K	10K	10K	15	10K	230	10.0K
75/04/15	15 30		3	5	0.11	10K	10K	10K	13	10K	830	30.0
75/04/30	15 45		1	8	0.12	10K	10K	10K	23	10K	470	10.0K
75/05/07	14 30		1K	5K	0.19	10K	10K	10K	810	10K	160	10.0K
75/05/14	15 00		3		0.12	12	10K	10K	25	10K	310	52.0
75/05/21	12 00		1	9	0.13	10K	24	11	43	10K	270	18.0
75/06/17	14 45		1	5K	0.20	10K	10K	10K	10K	10K	280	10.0K

STORET RETRIEVAL DATE 75/09/19

028 42CA032 BRU-0.4
47 49 12.0 092 03 03.0
BRULE R. NEAR HOVLAND
27 MINNESOTA
LAKE SUPERIOR BASIN
LAKE SUPERIOR BASIN IN MINNESOTA
21MINN 2111204
2 0999 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	00915 CALCIUM CA,TOT MG/L	00930 SODIUM NA,DISS MG/L	00935 POTASSIUM K,DISS MG/L	32730 PHENOLS TOTAL UG/L	00955 SILICA DISSOLVED MG/L	00061 STREAM FLOW, INST-CFS
73/07/23	14 00		15.0	7.00	1.00	5K	3.5	174
73/08/30	11 00		14.0	2.00	1.00K	9	5.9	179
73/09/13	13 30		14.0	2.00	1.00K	2	9.2	241
73/09/27	11 15		12.0	1.00	1.00K	2K	5.4	217
73/10/10	11 30		11.0	5.00	1.00	2	11.0	325
73/11/15	11 15		12.0	3.00	1.00K	2	9.7	181
73/12/21	10 30		15.0	3.80	1.10	7	11.0	122
74/01/31	12 45		13.0	4.30	1.90	2K	11.0	93
74/02/04	12 00		13.0	11.00	2.80	7	7.4	77
74/03/13	13 15		11.0	3.30	0.90	2K	8.5	74
74/04/03	12 30		13.0	4.30	1.50	3	9.0	91
74/04/10	10 45		13.0	2.50	0.70	2K	9.0	69
74/04/22	10 45		13.0	2.00	1.00K	2	7.5	620
74/05/07	13 45		11.0	2.00	2.00	3	7.3	711
74/05/14	13 00		10.0K	2.10	1.00K	2K	8.1	1216
74/06/14	11 30		5.0	1.50	1.00K	5	5.7	423
74/07/02	13 45		12.0	2.40	1.00K	4	4.7	133
74/08/14	09 30		12.0	4.00	1.00	3	4.0	92
74/09/11	10 45		13.0	2.10	1.00K	2K	5.4	423
74/10/08	10 15		13.0	3.00	1.00K	2K	6.2	172
74/11/06	08 45		12.0	2.00	1.00K	5	8.7	248
74/12/11	13 15		17.0	2.30	1.00K	2K	9.0	138
75/01/15	10 45		13.0	1.40	1.00K	5	9.2	100
75/02/25	10 15		22.0	4.00	1.00K	3	7.4	53
75/04/01	13 45		14.0	1.60	0.50K	2K	6.1	70
75/04/15	13 30		14.0	1.00	1.00K	4		440
75/04/16	13 45		14.0	0.50	0.50K	2K	8.2	650
75/05/07	14 30		8.0	1.00K	1.00K	4	10.0	1029
75/05/19	13 00		8.0	0.80	0.50K	2K	4.0	1031
75/05/21	12 00		13.0	1.30	0.40	2K	5.0	109
75/06/17	14 45		10.0	1.20	0.50K	2K	5.2	86

STORET RETRIEVAL DATE 75/10/15

028 MPCA032 BRU-0.4
47 49 12.0 090 03 03.0
BRULE R. NEAR HOVLAND
27 MINNESOTA
LAKE SUPERIOR BASIN
LAKE SUPERIOR BASIN IN MINNESOTA
21MINN 2111204
2 0999 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	00720 CYANIDE CN-TOT MG/L	00335 COD LOW LEVEL MG/L	00680 T ORG C C MG/L	01002 ARSENIC AS,TOT UG/L	01007 BARIUM BA,TOT UG/L	01034 CHROMIUM CR,TOT UG/L	71900 MERCURY HG,TOTAL UG/L	01147 SELENIUM SE,TOT UG/L	00920 MGNSIUM CACO3 MG/L
73/08/30	11	00							0.1		
73/09/13	16	30			18.7				0.1K		
73/09/27	11	15	0.005K	87.0		10K	20K	6	0.6	2K	16.0
73/10/18	11	00							0.6		
74/02/28	12	00	0.005K	50.0K	7.2	10K	20K	3	0.4	2K	10.0K
74/03/13	15	15			7.4						
74/04/10	10	45			6.5						
74/04/23	16	15	0.005K	50.0K	8.0	10K	10K	5	0.8	2K	4.0
74/05/07	15	45			8.5						
74/05/14	15	00			9.5						
74/05/19	11	00			10.5						
74/09/11	10	45	0.005K	50.0		10K	15K	4	0.1	2K	1.0K
75/[illegible]/25	16	15	0.005K	23.0	7.5	10K	15K	1	0.1K	2K	7.0
75/[illegible]/30	15	45	0.005K	29.0	10.0	10K	15K	1	0.1K	2K	6.0

STORET RETRIEVAL DATE 75/09/18

028 MPCA032 BRU-0.4
47 49 12.0 090 03 03.0
BRULE R. NEAR HOVLAND
27 MINNESOTA
LAKE SUPERIOR BASIN
LAKE SUPERIOR BASIN IN MINNESOTA
21MINN 2111204
2 0999 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	03501 BETA TOTAL PC/L		03502 BETA-T ERROR PC/L		07000 H-3 TOTAL PC/L	07001 H-3,TOTL ERROR PC/L	13501 SR-90 TOTAL PC/L	13502 SR-90 ERROR PC/L	09501 RA-226 TOTAL PC/L	09502 RA-226 ERROR PC/L	39370 DDT WHL SMPL UG/L	00550 OIL-GRSS TOT-SXLT MG/L
73/09/27	11 15			2K			300.0	130.0	0.5	0.2	14.0K		0.010K	0.5K
74/02/28	12 00			3		2	920.0	210.0	0.8	0.2	11.0K		0.050K	1.5
74/04/23	16 15			4K			432.0	190.0	0.7	0.2	11.0K		0.100K	0.8
74/06/11	10 45			6		3	430.0	170.0	0.6	0.2	2.0K			2.0
74/10/09	10 15												0.010K	0.7
75/02/25	16 15			3K			400.0	200.0	1.0	0.2	2.0K		0.010K	0.8
75/04/30	15 45			5		3	340.0	180.0	0.6	0.2	2.0K			

STORET RETRIEVAL DATE 75/09/18

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027 MPCA031 CAS-0
47 40 23.0 090 31 30.0
CASCADE R. S.E. OF GRAND MARAIS
27 MINNESOTA
LAKE SUPERIOR BASIN
LAKE SUPERIOR BASIN IN MINNESOTA
21MINN 2111204
2 0599 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	00010 WATER TEMP CENT	00011 WATER TEMP FAHR	31505 TOT COLI MPN CONF /100ML	31515 FEC COLI MPNECMED /100ML	00500 RESIDUE TOTAL MG/L	00530 RESIDUE TOT NFLT MG/L	00515 RESIDUE DISS-105 C MG/L	00070 TURB JKSN JTU	00900 TOT HARD CACO3 MG/L	00410 T ALK CACO3 MG/L
73/07/22	15 00		13.5	56.0	130	20K		1		1.0	32	40
73/08/30	13 00		17.4	63.0	490	79		2		1.5	36	29
73/11/14	11 00				17	2		3		1.2	32	43
73/03/27	14 15		10.5	51.0	460	80		11		4.0	36	20
73/10/16	09 45		6.0	42.8	130	5		0.5K		0.9	15	14
73/11/15	13 00		0.6	33.0	31	5		1		0.7	21	20
73/12/21	11 30		0.0	32.0	20K	20K		3	62	0.9	25	15
74/01/30	13 00		0.0	32.0	79	13	60	3	57	1.0	27	40
74/02/27	14 15		0.0	32.0	79	2K	62	2	60	1.3	29	29
74/03/19	09 20		0.0	32.0	33	2K	77	4	73	1.7	36	36
74/04/04	09 45		0.0	32.0	23	2	56	0.4	56	1.5	32	35
74/04/24	13 20		0.0	32.0	5	2K	54	0.4	64	2.0	32	28
74/05/23	14 00		0.0	33.0	130	17	83	28	55	0.5	15	10
74/05/31	13 15		4.4	40.0	79	2K	49	2	47	2.0	17	10K
74/06/19	09 00		4.4	40.0	130	7	95	24	71	15.0	14	10K
74/07/19	12 00		13.3	57.0	110	7	49	1	48	0.9	8	11
74/07/30	14 15		22.8	73.0	45	5	50	4	55	1.7	26	26
74/08/19	11 00		15.0	59.0	110	11	77	2	75	0.6K	31	33
74/09/11	14 30		13.9	57.0	950	460	80	14	66	4.0	24	18
74/10/09	12 00		5.5	42.0	110	11	57	2	55	2.2	22	25
74/11/06	10 30		1.7	35.0	130	17	54	3	51	1.6	18	18
74/12/11	09 45		0.0	32.0	33	2	61	7	54	1.1	25	20
75/01/15	14 45		0.0	32.0	220	50	66	2	64	6.5	25	20
75/02/25	13 45		0.6	33.0	110	2	61	5	56	1.5	39	32
75/04/03	11 45		0.0	32.0	49	2K	49	0.5K	49	1.4	39	37
75/04/16	14 00		0.0	32.0	280	5	69	10	59	14.0	35	27
75/04/30	13 10		1.7	35.0	56	4	64	8	56	6.2	23	20
75/05/07	12 45		7.2	45.0	170	2	54	6	48	3.3	18	10K
75/05/14	11 20		10.6	51.0	130	5	44	6	38	1.7	25	24
75/05/21	11 15		16.1	61.0	1700	220	51	1	50	1.7	24	19
75/06/17	13 50		14.4	58.0	27	2K	55	2	53	1.2	30	23

STORET RETRIEVAL DATE 75/07/15

027 MPCA031 CAS-0
47 40 26.0 090 31 30.0
CASCADE R. S.E. OF GRAND MARAIS
27 MINNESOTA
LAKE SUPERIOR BASIN
LAKE SUPERIOR BASIN IN MINNESOTA
21MINN 2111204
2 0599 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	00400 PH SU	00300 DO MG/L	00310 BOD 5 DAY MG/L	00665 PHOS-TOT MG/L P	00610 NH3-N TOTAL MG/L	00615 NO2-N TOTAL MG/L	00620 NO3-N TOTAL MG/L	00605 ORG N N MG/L	00600 TOTAL N N MG/L	00095 CNDUCTVY AT 25C MICROMHO
												67
75/03/25	15 00		7.60	9.2	1.1	0.020						59
75/04/15	12 00		8.00	9.2	1.0	0.040	0.100	0.010	0.500	0.560	1.30	56
75/04/16	11 00		7.90	10.2	0.8	0.060	0.050K	0.010	0.230	0.590	1.10	45
75/04/17	11 00		7.70	10.2	0.6	0.030	0.150	0.010	0.150	0.900	1.10	38
75/04/21	14 15		7.70	10.2	0.6	0.020	0.050K	0.010	0.100K	0.740	0.77	59
75/05/15	09 45		7.50	10.0	0.8	0.020	0.290	0.010K	0.170	0.640	1.10	58
75/05/19	13 30		7.80	10.5	1.1	0.040	0.050K	0.010	0.150	0.530	0.80	73
75/05/20	13 30		7.80		1.4	0.030	0.070	0.010K	0.220	0.510	0.80	70
75/05/21	11 30		7.50	10.5	1.5	0.050	0.130	0.010K	0.220	0.610	0.96	89
75/05/25	13 00		7.90	10.7	0.5K	0.030	0.050K	0.010K	0.540	0.490	1.02	68
75/05/27	14 15		8.20	10.7	0.8	0.020	0.140	0.010K	0.320	0.330	0.79	70
75/06/04	09 20		7.90	10.9	1.2	0.040	0.050K	0.010	0.360	0.340	0.71	36
75/06/05	13 20		7.90	10.1	0.5K	0.040	0.050K	0.050	0.440	0.730	1.40	33
75/06/09	13 20		7.70	10.9	0.7	0.030	0.050K	0.010K	0.330	0.520	0.85	34
75/06/23	14 30		7.70	10.6	0.5K	0.020	0.050K	0.010K	0.260	0.720	1.00	40
75/06/27	13 15		7.80	10.0	2.9	0.030	0.050K	0.020	0.260	0.800	1.08	50
75/06/29	14 30		7.80	10.1	0.7	0.020	0.350	0.010K	0.130	0.930	1.44	69
75/07/10	12 30		7.80	9.4	0.5K	0.030	0.300	0.010	0.200	0.460	0.66	63
75/07/11	14 15		7.70	9.8	0.5	0.030	0.050K	0.010	0.160	0.840	1.43	57
75/07/14	11 30		7.80	10.0	0.4	0.030	0.160	0.010	0.420	0.450	0.64	52
75/07/17	14 30		8.00	12.5	1.4	0.020	0.050K	0.010	0.180	0.210	0.43	70
75/07/21	12 00		8.00	13.8	0.5	0.010	0.050K	0.020	0.200	0.750	1.11	56
75/07/22	13 30		7.70	14.0	0.8	0.030	0.340	0.030	0.250	0.510	0.98	62
75/07/25	09 45		7.80	14.8	0.5K	0.030	0.050	0.050	0.510	0.460	0.92	64
75/07/25	14 45		7.80	14.0	0.5	0.020	0.050K	0.010	0.460	0.450	0.95	64
75/07/28	13 45		7.80	14.0	0.5	0.020	0.130	0.020	0.340	0.480	0.95	64
75/07/29	11 45		7.80	14.7	0.5	0.020	0.050	0.050	0.350	0.570	1.53	34
75/07/30	13 00		7.50	13.5	1.4	0.050	0.050K	0.050	0.370	0.470	0.87	34
75/07/30	13 30		7.80	14.5	1.4	0.030	0.050K	0.050	0.300	0.550	0.88	40
75/07/31	12 45		7.50	12.8	0.5	0.030	0.050K	0.050	0.100K	0.470	0.51	42
75/08/14	11 30		7.30	11.9	0.9	0.020	0.050K	0.040	0.100K	0.570	0.59	52
75/08/21	11 15		7.50	13.7	1.5	0.010	0.050K	0.020	0.100K	0.510	0.53	
75/08/17	13 30		7.50	9.9	1.3	0.020	0.050K	0.020				

STORET RETRIEVAL DATE 75/09/18

027 MPCA031 CAS-0
47 40 26.0 090 31 30.0
CASCADE R. S.E. OF GRAND MARAIS
27 MINNESOTA
LAKE SUPERIOR BASIN
LAKE SUPERIOR BASIN IN MINNESOTA
21MINN 2111204
2 0999 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	00940 CHLORIDE CL MG/L	00945 SULFATE SO4-TOT MG/L	00950 FLUORIDE F,DISS MG/L	01042 COPPER CU,TOT UG/L	01027 CADMIUM CD,TOT UG/L	01067 NICKEL NI,TOTAL UG/L	01092 ZINC ZN,TOT UG/L	01051 LEAD PB,TOT UG/L	01045 IRON FE,TOT UG/L	01055 MANGNESE MN UG/L
73/07/25	13 00		2		0.10						300	15.0
73/08/30	13 00		2		0.27	10K	10K	10K	10K	10K	355	10.0K
73/09/19	11 00		3		0.13	10K	10K	10K	10K	10K	570	10.0K
73/07/27	14 15		3	62	0.17	10K	10K	10K	10K	10K	520	40.0
73/10/15	09 45		2		0.16	10K	10K	10K	49	10K	420	32.0
73/11/15	13 30		2		0.15						360	10.0
73/12/21	11 30		3	11	0.15	10K	10K	10K	10K	10K	170	10.0K
74/01/31	13 00		1K	10	0.15						370	5.0K
74/02/27	14 15		1	10	0.13	10K	10K	10K	11	10K	420	10.0K
74/03/19	09 20		3	11	0.17	10K	10K	10K	11	10K	480	10.0K
74/04/30	09 45		2	10	0.17						360	10.0K
74/04/09	15 20		4	12	0.17	10K	10K	10K	20	10K	1000	5.0
74/04/24	14 00		2	8	0.10	10K	10K	10K	10K	10K	2100	110.0
74/05/07	13 15		3	10	0.11	10K	10K	10K	10K	10K	350	90.0
74/05/19	14 30		5	14	0.10	10K	10K	10K	16	10K	1600	10.0K
74/06/19	12 00		1	5K	0.10K	10K	10K	10K	23	10K	150	10.0K
74/07/09	14 15		2	5K	0.16	10K	10K	10K	56	10K	240	85.0
74/08/14	11 00		3	5K	0.15	10K	10K	10K	99	10K	340	10.0K
74/09/11	14 30		3	5K	0.19	10K	10K	10K	16	10K	1100	29.0
74/10/09	12 00		2	5K	0.13	10	10K	10K	10K	10K	360	24.0
74/11/06	10 30		2	5K	0.12	10K	10K	10K	10K	10K	500	10.0K
74/12/11	09 45		3	5	0.14	10K	10K	10K	10K	10K	270	21.0
75/01/15	14 45		2	9	0.11	10K	10K	10K	35	10K	330	10.0K
75/02/25	13 45		2	8	0.16	10K	10K	10K	14	10K	250	73.0
75/04/03	11 45		2	4	0.14	10K	10K	10K	14	10K	290	10.0K
75/04/16	13 00		3	3	0.14	10K	10K	10K	15	10K	69	30.0
75/04/30	13 10		1	8	0.10	10K	10K	10K	32	10K	970	91.0
75/05/07	12 45		1K	5	0.10	10K	10K	10K	37	10K	240	15.0
75/05/14	11 50		2	5K	0.10	12	10K	10K	110	10K	260	10.0K
75/05/21	11 15		1	9	0.15	10K	10K	10K	32	10K	530	26.0
75/06/17	13 30		1	5	0.21	10K	10K	10K	10K	10K	230	12.0

STORET RETRIEVAL DATE 75/09/15

027 MPCA031 CAS-0
47 40 26.0 092 31 30.0
CASCADE R. S.E. OF GRAND MARAIS
27 MINNESOTA
LAKE SUPERIOR BASIN
LAKE SUPERIOR BASIN IN MINNESOTA
21MINN 2111204
2 0599 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	00915 CALCIUM CA,DISS MG/L	00930 SODIUM NA,DISS MG/L	00935 PTSSIUM K,DISS MG/L	32730 PHENOLS TOTAL UG/L	00955 SILICA DISOLVED MG/L	00061 STREAM FLOW, INST-CFS
73/07/25	15 30		23.0		1.00K	5K	9.6	94
73/08/30	13 00		26.0	4.00	1.00K	3	9.8	100
73/09/14	11 00		22.0	2.00	1.00K	4	8.9	62
73/09/27	14 15		20.0	2.00	1.00K	9	11.0	217
73/10/18	09 45		11.0	4.00	1.00K	2K	8.5	211
73/11/15	13 00		14.0	3.00	1.00K	2K	11.2	226
73/12/21	11 30		19.0	3.70	1.00K	2K	13.0	23
74/01/30	13 00		20.0	5.20	1.40	5	13.0	14
74/02/27	14 15		26.0	7.70	1.00K	7	13.0	37
74/03/14	09 20		21.0	6.00	2.90	2K	23.0	50
74/04/04	09 45		24.0	5.10	1.40	2K	14.0	37
74/04/09	15 20		18.0	3.10	3.30	26	14.0	33
74/04/23	14 30		11.0	2.30	1.10	10	7.8	353
74/05/07	13 15		13.0	1.70	2.50	2K	7.9	108
74/05/14	14 00		13.0	2.10	1.10	4	8.0	627
74/05/15	12 00		4.8	2.20	1.00K	2	6.5	90
74/07/09	14 15		16.0	1.80	1.00K	6	7.7	57
74/08/14	11 00		21.0	2.40	1.60	9	8.2	14
74/09/11	14 30		20.0	2.30	1.00K	3	7.5	234
74/10/09	12 00		17.0	4.00	1.00K	2	8.4	45
74/11/06	10 30		10.0	2.10	1.10	28	8.8	23
74/12/11	09 45		19.0	2.80	1.00	3	9.8	45
75/01/15	14 45		13.0	1.50	1.00K	2	11.0	50
75/02/25	13 45		30.0	3.00	1.00K	4	11.0	25
75/04/03	11 45		23.0	2.40	0.50K	5	6.5	35
75/04/16	13 00		21.0	1.90	1.00K	2K		221
75/04/30	13 10		15.0	0.90	0.50K	5	8.1	367
75/05/07	12 45		6.0	1.00K	1.00K	5	7.5	419
75/05/14	11 30		12.0	0.90	0.50K	2K	4.3	251
75/05/21	11 15		17.0	1.50	0.50K	2K	4.8	174
75/06/17	13 30		16.0	1.70	0.50K	6	7.0	46

STORET RETRIEVAL DATE 75/10/15

027 MPCA031 CAS-0
47 40 26.0 090 31 30.0
CASCADE R. S.E. OF GRAND MARAIS
27 MINNESOTA
LAKE SUPERIOR BASIN
LAKE SUPERIOR BASIN IN MINNESOTA
21MINN 2111204
2 0999 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	00720 CYANIDE CN-TOT MG/L	00335 COD LOWLEVEL MG/L	00680 T ORG C C MG/L	01002 ARSENIC AS,TOT UG/L	01007 BARIUM BA,TOT UG/L	01034 CHROMIUM CR,TOT UG/L	71900 MERCURY HG,TOTAL UG/L	01147 SELENIUM SE,TOT UG/L	00920 MGNSIUM CACO3 MG/L
73/08/30	13 00								0.1K		
73/09/14	11 00				19.7				0.1K		
73/09/27	14 15		0.005K	62.0		13	20K	2K	0.6	2K	16.0
73/10/18	13 15								0.5		
74/02/27	14 15		0.005K	50.0K		10K	20K	2	0.2	2K	10.0K
74/03/14	09 20				8.3						
74/04/04	09 45				6.5						
74/04/09	15 20				5.8						
74/04/23	14 00		0.005K	52.0	14.0	10K	10K	7	0.6	2K	4.0
74/05/07	13 15				6.0						
74/05/14	14 00				10.5						
74/06/19	12 30				6.5						
74/09/11	14 30		0.005K	50.0K		10K	15K	2K	0.1	2K	4.0
75/02/25	13 45		0.005K	19.0	8.5	10K	15K	1	0.1K	2K	9.0
75/04/30	13 10		0.005K	38.0	14.0	10K	15K	2	0.1	2K	8.0

STORET RETRIEVAL DATE 75/09/18

027 MPCA031 CAS-0
47 40 26.0 090 31 30.0
CASCADE R. S.F. OF GRAND MARAIS
27 MINNESOTA
LAKE SUPERIOR BASIN
LAKE SUPERIOR BASIN IN MINNESOTA
21MINN 2111204
2 0999 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	03501 BETA TOTAL PC/L	03502 BETA-T ERROR PC/L	07000 H-3 TOTAL PC/L	07001 H-3,TOTL ERROR PC/L	13501 SR-90 TOTAL PC/L	13502 SR-90 ERROR PC/L	09501 RA-226 TOTAL PC/L	09502 RA-226 ERROR PC/L	39370 DDT WHL SMPL UG/L	00550 OIL-GRSE TOT-SXLT MG/L
73/09/27	14 15		3	2	150.0	130.0	0.3	0.2	13.0K		0.010K	0.5K
74/02/27	14 15		3	2	750.0	230.0	0.3	0.2	11.0K		0.050K	1.2
74/04/23	14 00		4K		320.0	190.0	0.5	0.2	11.0K		0.100K	0.5K
74/09/11	14 30		3K		400.0	170.0	0.6	0.2	2.0K			0.5K
75/02/25	13 45		5	3	380.0	200.0	0.4	0.2	2.0K		0.010K	0.6
75/04/30	13 10		6	3	330.0	180.0	0.4	0.2	1.0K		0.010K	1.2

STORET RETRIEVAL DATE 75/09/13

025 MPCA029 CRS-0.5
47 32 39.0 [illegible] 53 48.0
CROSS R. AT SCHROEDER
27 MINNESOTA
LAKE SUPERIOR BASIN
LAKE SUPERIOR BASIN IN MINNESOTA
21MINN 2111204
2 0999 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	00010 WATER TEMP CENT	00011 WATER TEMP FAHR	31505 TOT COLI MPN CONF /100ML	31615 FEC COLI MPN ECMED /100ML	00500 RESIDUE TOTAL MG/L	00530 RESIDUE TOT NFLT MG/L	00515 RESIDUE DISS-105 C MG/L	00070 TURB JKSN JTU	00900 TOT HARD CACO3 MG/L	00410 T ALK CACO3 MG/L
73/07/25	10 30		17.8	64.0	220	20		2		1.5		24
73/08/29	14 30		25.7	75.0	130	13		0.5K		1.0		26
73/09/13	14 30		15.0	59.0	75	17		3		1.5	32	23
73/09/26	11 45		11.1	52.0	95	17		5		2.2	44	24
73/10/17	13 [illegible]		5.0	41.0	75	8		4		1.2		24
73/11/14	11 30		1.1	34.0	170	17		0.4		1.2	18	20
73/12/05	11 [illegible]		0.0	32.0	49	2K		2		1.1	13	44
74/01/30	11 15		0.0	32.0	170	2K	86	2	78	1.2	24	36
74/02/27	12 30		0.0	32.0	49	5	63	3	60	1.5	40	24
74/03/13	10 35		0.0	32.0	31	2	63	2	61	0.1	24	22
74/04/05	10 45		0.0	32.0	70	7	58	0.4	58	1.5	24	29
74/04/15	13 30		0.0	33.0	8	2K	60	0.4	60	1.7	27	23
74/05/15	11 45		1.1	34.0	170	4	56	4	52	4.5	15	10K
74/05/07	11 10		3.9	39.0	13	2K	54	1	53	2.0	15	10K
74/05/14	12 15		3.9	39.0	79	49	49	3	41	3.0	14	10K
74/05/19	13 45		16.1	61.0	140	2	53	2	51	1.5	13	8
74/07/09	11 00		21.7	71.0	170	14	61	2	59	1.5	19	15
74/08/14	13 00		16.1	61.0	49	20K	73	0.4	73	0.2	24	31
74/10/09	12 45		6.1	43.0	17	17	71	6	65	1.5	35	19
74/11/05	12 45		2.8	37.0	170	2K	71	3	67	1.5	23	20
74/12/10	12 30		0.0	32.0	33	5	72	5	67	1.2	31	25
75/01/15	12 00		0.0	32.0	280	20K	67	52	15	4.2	25	18
75/02/25	11 15		0.6	33.0	7	2K	58	2	56	1.5	33	29
75/04/03	13 30		0.6	33.0	17	2K	45	1	42	3.4	35	31
75/04/16	11 15		0.0	32.0	79	2K	42	1	41	3.3	35	27
75/04/30	10 45		1.7	35.0	17	2	71	3	63	2.0	26	16
75/05/07	11 15		5.6	42.0	70	2K	48	5	43	3.5	17	11
75/05/14	10 30		11.7	53.0	110	33	52	7	45	2.9	24	19
75/05/21	10 15		14.4	58.0	70	11	64	5	59	5.3	28	20
75/06/17	11 30		15.6	60.0	490	11	57	0.5K	57	1.4	25	19

STORET RETRIEVAL DATE 75/03/18

025 MPCA029 ERS-3.5
47 32 37.0 092 53 48.0
CROSS R. AT SCANLON ER
27 MINNESOTA
LAKE SUPERIOR BASIN
LAKE SUPERIOR BASIN IN MINNESOTA
21MINN 2111204
2 0999 FEET DEPTH

DATE FROM TO	TIME	DEPTH OF SAMPLE FEET	00400 PH SU	00410 T ALK CACO3 MG/L	00610 NH3-N TOTAL MG/L	00615 NO2-N TOTAL MG/L	00620 NO3-N TOTAL MG/L	00625 TOT KJEL N MG/L	00630 TOTAL N MG/L	00095 CNDUCTVY AT 25C MICROMHO
75/03/26	13 30		7.40	13.0	0.5	0.020				47
75/03/26	14 30		8.60	14.4	0.5K	0.040	0.040	0.010	0.100K	0.470	0.52	46
75/04/15	14 30		7.50	11.0	0.5K	0.020	0.050K	0.010K	0.150	0.520	0.55	39
75/04/22	11 45		7.60	13.2	1.5	0.030	0.080	0.010	0.150	0.530	0.56	50
75/04/27	10 25		7.50	13.7	0.5K	0.020	0.050K	0.010	0.100	0.500	0.51	43
75/05/16	11 30		8.00	14.4	0.5	0.070	0.160	0.010	0.170	0.760	1.02	57
75/05/20	11 20		7.60	13.8	0.5K	0.040	0.090	0.010K	0.250	0.720	1.02	53
75/06/03	11 15		7.60	14.4	1.5	0.070	0.110	0.010K	0.190	0.510	0.81	55
75/06/27	12 30		7.50	14.6	0.9	0.030	0.100	0.010K	0.220	0.720	1.04	70
75/07/18	10 30		8.30	14.4	0.5	0.040	0.050K	0.010K	0.420	0.430	0.85	71
75/08/05	11 45		7.50	14.1	2.5	0.020	0.130	0.010K	0.390	0.410	0.93	57
75/08/12	13 30		7.60	14.7	0.5K	0.010	0.050K	0.010	0.310	0.410	0.73	59
75/08/26	11 45		7.20	13.9	2.5	0.060	0.050K	0.030	0.490	0.920	1.44	38
75/09/08	14 00		7.50	13.3	1.5	0.030	0.050K	0.010K	0.220	0.570	0.59	37
75/09/16	12 15		7.10	12.1	2.5	0.060	0.050K	0.010	0.370	0.750	1.13	35
75/10/14	13 45		7.20	9.5	1.0	0.070	0.380	0.010K	0.100K	0.590	0.97	33
75/10/28	11 00		7.50	9.5	0.5	0.030	0.230	0.010K	0.140	0.700	1.28	49
75/11/10	13 00		7.70	9.5	1.0	0.040	0.050K	0.050	0.210	0.420	0.68	51
75/11/24	10 45		7.20	12.1	0.5K	0.010K	0.050K	0.010	0.280	0.450	0.75	53
75/12/09	11 45		7.60	13.3	1.1	0.010	0.050K	0.030	0.100K	0.580	0.61	52
75/12/23	12 30		7.60	14.2	0.8	0.030	0.050K	0.100	0.540	0.690	1.10	69
76/01/13	12 00		7.10	14.2	0.5K	0.040	0.060	0.050	0.620	0.920	1.03	62
76/02/23	11 15		7.50	13.5	0.5K	0.010	0.050K	0.010	0.430	0.540	0.98	59
76/03/03	13 50		7.60	14.4	1.0	0.040	0.220	0.010	0.340	0.710	1.28	85
76/04/13	11 15		7.70	12.7	1.1	0.020	0.130	0.060	0.670	0.470	1.51	61
76/04/26	13 45		8.40	13.5	1.0	0.030	0.050K	0.030	0.220	0.550	0.54	36
76/05/07	11 15		8.00	12.6	0.8	0.030	0.050K	0.030	0.420	0.590	1.00	35
76/05/24	13 30		8.10	13.8	1.4	0.050	0.050K	0.060	0.210	0.740	0.99	41
76/06/21	10 15		7.80	9.5	1.1	0.030	0.060	0.020	0.140	0.560	0.80	51
76/06/17	11 30		7.90	9.1	1.4	0.020	0.060	0.020	0.100K	0.740	0.82	53

STORET RETRIEVAL DATE 75/09/13

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025 MPCAC29 CRS-0.5
47 32 39.0 093 53 48.0
CROSS R. AT SCHROEDER
27 MINNESOTA
LAKE SUPERIOR BASIN
LAKE SUPERIOR BASIN IN MINNESOTA
21MINN 2111204
2 0999 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	00940 CHLORIDE CL MG/L	00945 SULFATE SO4-TOT MG/L	00950 FLUORIDE F,DISS MG/L	01042 COPPER CU,TOT UG/L	01027 CADMIUM CD,TOT UG/L	01067 NICKEL NI,TOTAL UG/L	01092 ZINC ZN,TOT UG/L	01051 LEAD PB,TOT UG/L	01045 IRON FE,TOT UG/L	01055 MANGNESE MN UG/L
75/07/23	13 30		2		0.20						570	21.0
75/08/29	14 30		3			10K	10K	10K	10K	10K	440	10.0K
75/09/13	14 30		2		0.23	10K	10K	10K	10K	10K	680	10.0K
75/10/25	11 45		4	11	0.23	10K	10K	10K	22	10K	470	40.0
75/10/17	13 15		4								940	10.0
75/11/14	11 30		1								340	10.0
75/12/05	11 20		2		0.17	10K	10K	10K	10K	10K	10K	10.0K
74/01/30	11 15		1K	11	0.19						420	10.0
74/02/27	12 30		1	10	0.22	10K	10K	10K	29	10K	540	11.0
74/03/13	10 55		0.5	14	0.22						420	5.0K
74/04/03	13 45		1K	10	0.20	10K	10K	10K	13	10K	400	10.0K
74/04/15	13 30		2	11	0.19	10K	10K	10K	10K	10K	410	5.0K
74/05/23	11 45		2	3	0.12	10K	10K	10K	25	10K	800	51.0
74/05/07	11 15		4	10	0.15	10K	10K	10K	10K	10K	330	10.0
74/05/14	12 15		4	13	0.12	10K	10K	10K	16	10K	800	10.0K
74/05/19	13 45		5	5K	0.15	10K	10K	10K	10K	10K	350	24.0
74/07/09	11 00		2	11	0.21	10K	10K	10K	35	10K	320	27.0
74/08/14	13 00		1K	5K	0.21	10K	10K	10K	10K	10K	250	10.0K
74/09/10	13 00		2	10	0.29	10K	10K	10K	10K	10K	720	65.0
74/10/03	12 45		2	10	0.15	10	10K	10K	10K	10K	800	10.0K
74/11/05	12 45		3	5K	0.20	10K	10K	11	10K	10K	380	10.0K
74/12/10	12 30		3	8	0.25	10K	10K	10K	10K	10K	270	15.0
75/01/15	12 00		2	10	0.17	10K	10K	10K	36	10K	370	10.0K
75/02/25	11 15		3	9	0.23	10K	10K	10K	20	10K	300	36.0
75/04/03	13 30		1	9	0.20	10K	10K	10K	15	10K	240	10.0K
75/04/15	11 15		2	6	0.12	10K	10K	13	29	10K	400	10.0K
75/05/30	13 45		1	10	0.15	10K	10K	10K	15	10K	450	57.0
75/05/07	11 15		1K	3	0.14	10K	10K	10K	28	10K	350	33.0
75/05/14	10 30		6	5K	0.57	10K	10K	10K	23	10K	470	30.0
75/05/21	10 15		2	8	0.09	10K	10K	10K	680	10K	280	10.0K
75/06/17	11 30		2	8	0.26	10K	10K	10K	10K	10K	330	19.0

STORET RETRIEVAL DATE 75/08/13

025 MPCA029 CRS-0.5
47 22 39.0 090 53 48.0
CROSS R. AT SCHROEDER
27 MINNESOTA
LAKE SUPERIOR BASIN
LAKE SUPERIOR BASIN IN MINNESOTA
21MINN 2111204
2 0999 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	00910 CALCIUM CA,DISS MG/L	00930 SODIUM NA,DISS MG/L	00935 POTASSIUM K,DISS MG/L	32730 PHENOLS TOTAL UG/L	00955 SILICA DISSOLVED MG/L	00061 STREAM FLOW, INST-CFS
74/07/23	10 30		18.0	3.00	1.00K	5K	9.8	114
74/08/21	14 30		22.0	2.00	1.00K	4	9.8	50
74/09/13	14 30		16.0	2.00	1.00K	3	10.0	80
74/09/25	11 45		24.0	2.00	1.00K	2K	10.0	132
74/10/17	10 25					2K	11.0	174
74/11/19	11 30		13.0	4.00	2.00	2K	11.0	162
74/12/03	11 20		11.0	4.50	0.50	4K	20.0	100
74/01/13	11 15		22.0	3.70	1.40	8	12.0	28
74/02/27	12 50		31.0	5.20	1.00K	3	13.0	15
74/03/13	13 55		17.0	4.50	0.80	3	14.0	20
74/04/03	10 45		17.0	5.10	1.20	2K	14.0	19
74/04/13	13 50		15.0	1.60	3.70	7	13.0	27
74/04/25	11 45		10.0	3.30	1.50	2K	8.2	494
74/05/07	11 10		14.0	1.70	3.00	15	8.1	192
74/05/14	12 15		13.0	3.10	1.00K	20	8.4	571
74/05/19	13 45		14.0	1.50	6.50	10	5.8	138
74/07/09	11 50		11.0	1.40	1.00K	3	4.5	123
74/07/16	13 00		24.0	3.20	1.60	32	7.0	21
74/08/13	14 00		20.0	2.70	1.20	2	6.4	19
74/10/15	12 45		22.0	4.00	1.00K	5	9.9	35
74/11/19	12 45		16.0	3.60	1.70	2	9.0	40
74/12/13	12 30		29.0	2.40	1.00K	2K	11.0	37
75/01/15	12 30		17.0	2.40	1.40	23	11.0	33
75/02/25	11 15		22.0	3.40	1.00K	8	11.0	19
75/04/03	13 50		22.0	2.10	0.50	2K	9.3	25
75/04/15	11 45		23.0	1.80	1.00K			160
75/04/30	10 45		18.0	0.70	0.50K	2K	8.0	280
75/05/07	11 15		10.0	1.00K	1.00K	2	5.6	332
75/05/14	13 30		12.0	1.00	0.50K	14	3.0	188
75/05/21	13 15		23.0	1.40	0.70	2K	5.9	154
75/06/17	11 30		15.0	1.50	0.50K	2	6.4	123

STORET RETRIEVAL DATE 75/10/15

025 MPCA029 C3S-0.5
47 32 39.0 090 53 48.0
CROSS R. AT SCHROEDER
27 MINNESOTA
LAKE SUPERIOR BASIN
LAKE SUPERIOR BASIN IN MINNESOTA
21MINN 2111204
2 0999 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	00720 CYANIDE CN-TOT MG/L	00335 COD LOWLEVEL MG/L	00680 T ORG C C MG/L	01002 ARSENIC AS,TOT UG/L	01007 BARIUM BA,TOT UG/L	01034 CHROMIUM CR,TOT UG/L	71900 MERCURY HG,TOTAL UG/L	01147 SELENIUM SE,TOT UG/L	00920 MGNSIUM CACO3 MG/L
73/08/29	14	50			9.3						
73/09/13	14	30			10.9						
73/09/26	11	45	0.005K	150.0	17.3	10K	20K	2K	0.1K 0.3	2K	20.0
73/10/17	10	25			23.5						
74/02/27	12	30	0.005K	50.0K		10K	20K	2	0.3 0.3	2K	10.0K
74/03/13	10	35			8.8						
74/04/10	13	30			8.5						
74/04/23	11	45	0.005K	50.0K		10K	10K	2K	0.2	2K	8.0
74/05/07	11	10			6.5						
74/05/14	12	15			11.0						
74/06/19	13	45			11.5						
74/09/10	13	00	0.005K	50.0K		10K	15K	2K	0.1K	2K	4.0
75/02/25	11	15	0.005K	28.0	9.0	10K	15K	1	0.1K	2K	8.0
75/04/30	10	45	0.005K	32.0	17.0	10K	15K	0.4	0.2	2K	8.0

STORET RETRIEVAL DATE 75/09/18

025 MPCA029 CRS-0.5
47 32 39.0 090 53 48.0
CROSS R. AT SCHROEDER
27 MINNESOTA
LAKE SUPERIOR BASIN
LAKE SUPERIOR BASIN IN MINNESOTA
21MINN 2111204
2 0999 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	03501 BETA TOTAL PC/L	03502 BETA-T ERROR PC/L	07000 H-3 TOTAL PC/L	07001 H-3,TOT ERROR PC/L	13501 SR-90 TOTAL PC/L	13502 SR-90 ERROR PC/L	09501 RA-226 TOTAL PC/L	09502 RA-226 ERROR PC/L	39370 DDT WHL SMPL UG/L	00550 OIL-GRSE TOT-SXLT MG/L
73/09/26	11 45		5	2	420.0	250.0	0.6	0.2	8.3	6.6	0.010K	0.5K
74/02/27	12 30		3	3	890.0	190.0	0.8	0.2	11.0K		0.050K	2.1
74/04/23	11 45		4K		590.0	180.0	0.4	0.2	11.0K		0.100K	0.5
74/09/10	13 00		6	3	210.0	170.0	0.8	0.2	2.0K			0.7
75/02/25	11 15		3K		340.0	200.0	0.5	0.2	2.0K		0.010K	0.7
75/04/30	10 45		9	3	380.0	180.0	0.7	0.2	2.0	2.0	0.010K	3.0

STORET RETRIEVAL DATE 75/09/18

016 MPCA020 FR-0.1
46 54 05.0 091 53 30.0
FRENCH R. NEAR DULUTH
27 MINNESOTA
LAKE SUPERIOR BASIN
LAKE SUPERIOR BASIN IN MINNESOTA
21MINN 2111204
2 0999 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	00010 WATER TEMP CENT	00011 WATER TEMP FAHN	31505 TOT COLI MPN CONF /100ML	31615 FEC COLI MPNECMED /100ML	00500 RESIDUE TOTAL MG/L	00530 RESIDUE TOT NFLT MG/L	00515 RESIDUE DISS-105 C MG/L	00070 TURB JKSN JTU	00900 TOT HARD CACO3 MG/L	00410 T ALK CACO3 MG/L
73/07/24	09 00		17.2	63.0	330	330		2		1.2	81	86
73/08/23	15 15				240	79		1		1.0	88	64
73/09/12	11 30		13.8	57.0	490	22		1		1.3	68	45
73/09/25	10 00		11.7	53.0	1400	130		7		2.3	84	69
73/10/16	09 00		5.0	41.0	790	5		17		2.9		35
73/11/13	10 00		1.1	34.0	280	33		2		2.3		49
73/12/04	09 45		0.0	32.0	130	22		6		3.2	45	64
74/01/29	09 45		0.0	32.0	110	33	110	2	108	1.3	79	59
74/02/26	10 00		0.0	32.0	330	70	120	0.4	120	1.4	73	81
74/03/12	10 30		0.0	32.0	460	130	120	1	119	1.7	98	85
74/04/02	09 30		0.0	32.0	490	140	110	0.4	110	1.2	82	94
74/04/09	09 05		0.0	32.0	170	170	120	6	114	4.5	74	90
74/04/24	14 30		3.3	33.0	280	2K	58	14	58	7.0	24	19
74/05/03	14 35		7.2	45.0	33	13	73	4	69	3.0	33	32
74/05/15	16 45		7.2	45.0	220	130	69	9	61	6.0	27	25
74/06/18	09 00		10.0	50.0	490	22	93	1<	93	2.2	42	46
74/07/10	16 30		20.0	63.0	1100	95	100	2	98	1.0	67	60
74/08/13	08 00		15.6	60.0	1100	140	120	1	119	1.8	73	58
74/09/12	15 45		10.6	51.0	220	22	110	0.5<	110	0.5	70	70
74/10/07	15 15		5.0	41.0	230	17	120	5	115	1.3		
74/11/04	15 15		3.9	39.0	49	33	120	0.5<	120	2.0	67	51
74/12/11	15 15		32.0	0.0	49	5	140	8	132	0.9	99	100
75/01/14	14 45		0.0	32.0	110	33	130	6	124	17.0	68	63
75/02/25	15 50		0.0	32.0	79	4	320	1	319	1.0	65	83
75/03/26	16 50		0.0	32.0	170	4	130	0.5<	130	9.5	70	61
75/04/15	15 05		0.0	32.0	540	130	120	15	105	21.0	62	54
75/05/01	13 30		3.3	33.0	280	17	73	15	57	8.1	28	28
75/05/08	14 10		10.6	51.0	17	2	72	2	70	5.6	29	22
75/05/13	15 30		16.1	61.0	330	2	76	1	75	2.0	44	39
75/05/22	15 00		18.9	66.0	140	70	92	4	89	1.9	59	55
75/06/16	14 30		16.1	61.0	1300	33	106	2	104	4.3	46	45

START RETRIEVAL DATE 75/09/15

016 MPCA020 ER-0.1
46 54 06.0 091 53 30.0
FRENCH R. NEAR DULUTH
27 MINNESOTA
LAKE SUPERIOR BASIN
LAKE SUPERIOR BASIN IN MINNESOTA
21MINN 2111204
2 0959 FEET DEPTH

DATE FROM TO	TIME	DEPTH OF DAY FEET	00400 PH SU	00300 DO MG/L	00310 BOD 5 DAY MG/L	00665 PHOS-TOT MG/L P	00610 NH3-N TOTAL MG/L	00615 NO2-N TOTAL MG/L	00620 NO3-N TOTAL MG/L	00605 ORG N N MG/L	00600 TOTAL N N MG/L	00095 CNDUCTVY AT 25C MICROMHO
75/07/24	07 30		8.10	10.1	0.5K	0.060						150
75/08/24	15 15		6.50	9.8	0.5	0.040	0.120	0.010	0.100K	0.800	0.93	110
75/09/12	11 30		7.90	9.7	0.8	0.020	0.090	0.010	0.100K	0.950	1.10	110
75/09/23	10 07		7.70	10.0	0.5	0.020	0.070	0.020	0.100K	0.740	0.85	120
75/10/10	09 00		7.60	11.6	0.5K	0.020	0.200	0.010K	0.100	1.200	1.50	72
75/11/13	10 00		7.40	13.9	0.8	0.020	0.270	0.010K	0.140	0.630	1.04	95
75/12/04	09 45		7.70	14.4	0.7	0.040	0.080	0.010	0.050K	0.380	0.47	100
76/01/22	09 45		7.70	14.4	0.9	0.170	0.250	0.010	0.150	0.430	0.84	170
76/02/26	10 00		7.90	13.2	0.5K	0.040	0.050K	0.010K	0.300	0.510	0.81	170
76/03/12	10 30		7.90	14.2	0.8	0.010	0.050K	0.010	0.370	0.410	0.79	190
76/04/02	09 30		7.70	14.4	2.7	0.030	0.160	0.010K	0.190	0.340	0.69	150
76/04/09	09 00		7.70	15.2	0.5K	0.420	0.050K	0.020	0.160	0.460	0.84	150
76/04/26	14 30		7.50	12.5	2.1	0.030	0.050K	0.010	0.250	0.650	0.92	55
76/05/05	14 35		7.70	11.3	0.5K	0.010K	0.050K	0.010K	0.100K	0.570	0.57	74
76/05/19	10 45		7.60	12.1	0.6	0.030	0.050K	0.020	0.110	0.570	0.71	54
76/06/14	09 00		8.00	10.4	1.9	0.030	0.350	0.010K	0.230	0.850	1.44	96
76/07/13	15 30		8.20	9.8	1.2	0.020	0.110	0.010K	0.190	0.450	0.75	140
76/08/13	08 00		7.70	9.4	0.5K	0.070	0.050K	0.010	0.120	0.150	0.55	150
76/09/12	13 45		7.60	10.4	0.5K	0.010	0.200	0.010	0.100K	0.480	0.69	160
76/10/07	13 15		8.40	11.1	2.4	0.010K	0.070	0.010K	0.100K	0.380	0.45	150
76/11/04	13 15		7.70	13.9	0.8	0.020	0.050K	0.010	0.170	0.570	0.79	130
76/12/11	10 15		7.70	14.0	0.8	0.010	0.050K	0.020	0.150	0.390	0.56	190
77/01/14	14 45		7.80	14.7	1.3	0.030	0.050K	0.010	1.000	0.320	1.42	140
77/02/26	13 50		8.10	14.4	0.6	0.020	0.050K	0.020	0.460	0.310	0.79	170
77/03/26	10 30		8.00	13.0	0.8	0.030	0.170	0.010K	0.170	0.440	0.78	150
77/04/15	13 05		7.70	12.2	1.3	0.110	0.060	0.070	0.270	0.550	0.95	110
77/05/24	13 30		7.10	12.8	1.1	0.050	0.120	0.020	0.150	0.470	0.83	46
77/06/23	14 10		7.40	11.6	0.6	0.040	0.050	0.020	0.110	0.550	0.83	59
77/07/13	13 30		7.60	9.3	1.1	0.030	0.080	0.030	0.180	0.520	0.81	79
77/08/22	13 00		7.10	8.9	1.3	0.010	0.110	0.020	0.140	0.480	0.75	97
77/09/19	14 30		7.50	9.9	1.6	0.030	0.070	0.040	0.110	0.940	1.16	81

STORET RETRIEVAL DATE 75/03/14

016 MPCA020 FR-3.1
46 54 00.0 091 55 30.0
FRENCH R. NEAR DULUTH
27 MINNESOTA
LAKE SUPERIOR BASIN
LAKE SUPERIOR BASIN IN MINNESOTA
21MINN 2111204
2 0999 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	00940 CHLORIDE CL MG/L	00945 SULFATE SO4-TOT MG/L	00950 FLUORIDE F,DISS MG/L	01042 COPPER CU,TOT UG/L	01027 CADMIUM CD,TOT UG/L	01067 NICKEL NI,TOTAL UG/L	01092 ZINC ZN,TOT UG/L	01051 LEAD PB,TOT UG/L	01045 IRON FE,TOT UG/L	01055 MANGNESE MN UG/L
73/11/24	07 00		4		0.10						10K	10.0K
73/03/25	15 15		1K		0.10K	10K	10K	10K	65	10K	300	48.0
73/04/12	11 30		2		0.10K	10K	10K	10K	18	10K	500	10.0K
73/03/25	13 00		7	9	0.13	10K	10K	10K	10K	10K	520	10.0K
73/10/16	07 00		2								940	10.0K
73/11/13	13 00		3			10K	10K	10K	10K	10K	380	10.0K
73/12/04	07 45		1		0.10	10K	10K	10K	10K	10K	450	10.0K
74/01/24	07 45		5	10	0.13						350	5.0
74/02/25	10 00		2	9	0.14	10K	10K	10K	10K	17	260	10.0K
74/03/12	10 30		10		0.24						180	5.0K
74/04/02	09 30		4	12	0.16							
74/04/09	07 05		1K	11	0.26	10K	10K	10K	11	10K	470	11.0
74/04/24	14 30		4	7	0.10K	10K	10K	10K	10K	10K	780	10.0K
74/05/03	14 35		4	11	0.11	10K	10K	10K	11	10K	490	51.0
74/05/15	10 45		1	13	0.10K	10K	10K	10K	10K	10K	890	10.0K
74/05/13	07 00		5	12	0.10	10K	10K	10K	10K	10K	420	52.0
74/07/10	10 30		3	11	0.19	10K	10K	10K	14	10K	10K	14.0
74/04/15	08 00		5	11	0.15	10K	10K	10K	10K	10K	230	10.0K
74/03/12	15 45		2	9	0.24	10K	10K	10K	20	10K	270	10.0
74/10/07	15 15		3			10K	10K	45	23	62	360	10.0K
74/11/06	15 15		5	11	0.10	10K	10K	15	10K	10K	450	10.0K
74/12/11	10 15		5	8	0.17	10K	10K	10K	10K	10K	220	10.0K
75/01/14	14 45		4	14	0.12	13	10K	10K	39	10K	1100	10.0K
75/02/25	15 50		4	9	0.15	10K	10K	10K	17	10K	150	33.0
75/03/25	15 30		3	10	0.18	10K	10K	10K	18	10K	540	24.0
75/04/15	15 00		5	11	0.10K	10	10K	10K	29	10K	1900	58.0
75/05/01	13 30		2	9	0.10K	10K	10K	10K	10K	10K	940	10.0K
75/05/08	14 10		2	9	0.10K	10K	10K	10K	19	10K	450	15.0
75/05/13	15 30		2	8	0.10K	27	10K	31	38	10K	800	10.0K
75/05/22	15 00		5	5	0.17	10K	10K	10K	49	10K	160	82.0
75/05/16	14 30		2	5K	0.18	10K	10K	10K	10	10K	390	16.0

START RETRIEVAL DATE 79/09/13

016 MPCA020 FX-J.1
46 54 05.0 091 53 30.0
FRENCH R. NEAR DULUTH
27 MINNESOTA
LAKE SUPERIOR BASIN
LAKE SUPERIOR BASIN IN MINNESOTA
21MINN 2111204
2 0999 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	00910 CALCIUM CA,DISS MG/L	00930 SODIUM NA,DISS MG/L	00935 POTSSIUM K,DISS MG/L	32730 PHENOLS TOTAL UG/L	00955 SILICA DISOLVED MG/L	00061 STREAM FLOW, INST-CFS
78/07/24	09 00		48.0	7.00	1.00K	5P	12.0	5
78/08/23	13 15		60.0	5.00	1.00K	11	13.0	4
78/09/12	11 30		50.0	5.00	1.00K	4	13.0	5
78/09/25	13 30		50.0	4.00	1.00K	2	14.0	98
78/10/16	09 30					2K	14.0	.8
78/11/13	13 00					2	13.0	17
78/12/04	09 45		28.0	3.00	1.00	2K	15.0	2
79/01/22	09 45		52.0	1.60	2.90	2K	16.0	11
79/02/26	13 30		52.0	4.40	1.00K	2K	19.0	5
79/03/12	10 30		67.0	13.00	2.50	16	19.0	7
79/04/02	09 30		43.0	6.70	2.30	13	18.0	8
79/04/09	09		49.0	5.20	2.10	2K	18.0	7
79/04/24	14 30		13.0	2.70	2.00	8	11.0	121
79/05/08	14 35		24.0	2.50	2.00	7	7.4	29
79/05/15	14 45		13.0	2.30	1.00K	20	9.8	100
79/06/18	09 00		31.0	2.40	1.00K	2K	10.0	29
79/07/10	10 30		41.0	2.50	1.00K	2K	11.0	1
79/08/13	08 30		33.0	3.40	1.00K	2K	11.0	3
79/09/12	13 45		50.0	4.00	1.00K	3	11.0	4
79/10/07	13 15					3	16.0	29
79/11/04	13 15		47.0	3.50	1.00	2K	14.0	10
79/12/11	10 15		40.0	4.50	2.40	5	15.0	2
80/01/14	14 45		40.0	0.10	1.90	3	16.0	2
80/02/26	13 30		33.0	5.30	1.00K	4	16.0	3
80/03/25	13 30		47.0	3.10	1.90	12	15.0	12
80/04/15	13 00		35.0	3.20	0.70	2K		30
80/05/01	13 30		18.0	1.10	0.50	7	8.0	241
80/05/08	14 10		15.0	1.40	0.70	2	7.6	115
80/05/13	13 30		20.0	1.70	0.90	2	7.9	10
80/05/22	13 00		40.0	2.90	0.80	2	8.1	1
80/05/16	14 30		34.0	2.30	0.50K	2	8.6	27

STORET RETRIEVAL DATE 75/10/15

016 MPCA020 FR-0.1
46 54 06.0 091 53 30.0
FRENCH R. NEAR DULUTH
27 MINNESOTA
LAKE SUPERIOR BASIN
LAKE SUPERIOR BASIN IN MINNESOTA
21MINN 2111204
2 0999 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	00720 CYANIDE CN-TOT MG/L	00335 COD LOW LEVEL MG/L	00680 T ORG C C MG/L	01002 ARSENIC AS,TOT UG/L	01007 BARIUM BA,TOT UG/L	01034 CHROMIUM CR,TOT UG/L	71900 MERCURY HG,TOTAL UG/L	01147 SELENIUM SE,TOT UG/L	00920 MGNSIUM CACO3 MG/L
73/09/12	11 30				22.0				0.1K		
73/09/25	10 00		0.005K	50.0K	16.5	10K	20K	2K	0.9	2K	24.0
73/10/16	09 00				11.2				0.3		
73/11/13	10 00				13.3						
73/12/04	09 45				9.1				0.1		
74/02/26	10 00		0.005K	50.0K		10K	20K	2	0.2	2K	21.0
74/03/12	10 30				7.0						
74/04/09	09 05				5.2						
74/04/24	14 30		0.005K	50.0K		10K	10K	2K	1.9	2K	6.0
74/05/08	13 20				10.5						
74/05/15	16 45				11.0						
74/05/18	09 00				10.8						
74/09/12	15 45		0.005K	10.0K		10K	15K	2K	0.1K	2K	60.0
75/02/26	15 50		0.005K	16.0	8.2	10K	15K	1	0.1K	2K	50.0
75/05/01	13 30		0.005K	32.0	17.0	10K	15K	3	0.1	2K	10.0

STORET RETRIEVAL DATE 75/09/18

016 MPCA020 FR-0.1
46 54 06.0 091 53 30.0
FRENCH R. NEAR DULUTH
27 MINNESOTA
LAKE SUPERIOR BASIN
LAKE SUPERIOR BASIN IN MINNESOTA
21MINN 2111204
2 0999 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	03501 BETA TOTAL PC/L	03502 BETA-T ERROR PC/L	07000 H-3 TOTAL PC/L	07001 H-3,TOTL ERROR PC/L	13501 SR-90 TOTAL PC/L	13502 SR-90 ERROR PC/L	09501 RA-226 TOTAL PC/L	09502 RA-226 ERROR PC/L	39370 DDT WHL SMPL UG/L	00550 OIL-GPSE TOT-SXLT MG/L
73/09/25	10 00		7	3	240.0K		0.9	0.2	6.0K		0.010K	0.5K
74/02/26	10 00		4	3	520.0	210.0	0.9	0.2	12.0K		0.050K	2.3
74/04/24	14 30		2K		490.0	110.0	0.2K		12.0K		0.100K	0.9
74/09/12	15 45		3K		410.0	170.0	0.8	0.2	2.0K			0.5K
75/02/26	15 50		3	3	400.0	200.0	0.7	0.2	3.0	3.0	0.010K	0.5K
75/05/01	13 30		6	2	400.0	190.0	0.9	0.2	2.0K		0.010K	0.5K

STORET RETRIEVAL DATE 75/09/15

019 MPCA023 GR-0.8
47 08 24.0 091 27 24.0
GOOSEBERRY R. NEAR CASTLE DANGER
27 MINNESOTA
LAKE SUPERIOR BASIN
LAKE SUPERIOR BASIN IN MINNESOTA
21MINN 2111204
2 0999 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	00010 WATER TEMP CENT	00011 WATER TEMP FAHN	31505 TOT COLI MPN CONF /100ML	31615 FEC COLI MPNECMED /100ML	00500 RESIDUE TOTAL MG/L	00530 RESIDUE TOT NFLT MG/L	00515 RESIDUE DISS-105 C MG/L	00070 TURB JKSN JTU	00900 TOT HARD CACO3 MG/L	00410 T ALK CACO3 MG/L
73/07/24	13 30		15.3	63.0	1700	80		4		7.5	45	56
73/08/29	12 20		22.2	72.0	110	130		2		4.2		52
73/09/12	13 00		16.1	61.0	790	11		1		5.4	64	58
73/09/25	13 30		13.9	57.0	130	7		4		6.7	72	58
73/10/26	13 25		6.0	43.0	490	9		9		9.5		34
73/11/13	13 30		0.5	33.0	330	11		1		4.5		42
73/12/04	13 15		0.0	32.0	110	2		11		8.1	36	57
74/01/29	14 30		0.0	33.0	79	2K	120	2	118	2.6	63	70
74/02/26	13 45		0.0	32.0	13	2K	98	0.4	98	3.6	70	62
74/03/12	13 00		0.0	32.0	13	2K	92	4	88	5.1	61	77
74/04/02	12 15		0.0	32.0	80	20K	96	0.4	96	3.7	63	70
74/04/09	11 00		0.0	32.0	11	2K	97	4	93	9.0	53	60
74/04/24	12 00		1.1	34.0	220	2K	97	40	57	29.0	16	11
74/05/03	12 25		5.1	41.0	39	2	66	4	62	10.0	35	23
74/05/15	14 00		6.7	44.0	230	2	75	20	55	16.0	20	10K
74/05/18	11 45		11.1	52.0	700	130	80	10	70	5.2	40	37
74/07/10	14 00		21.7	71.0	230	27	78	2	76	4.3	57	93
74/08/13	11 00		17.8	64.0	700	49	110	5	105	8.4	63	55
74/09/12	12 00		11.1	52.0	330	11	100	5	95	3.3	66	66
74/10/03	09 45		5.6	42.0	64	5	100	6	94	5.2	57	60
74/11/05	09 30		2.2	36.0	1100	14	110	5	105	13.0	44	45
74/12/11	13 30		0.0	32.0	33	2K	130	10	120	4.5	80	72
75/01/16	13 15		0.0	32.0	1700	20	120	4	116	23.0	44	40
75/02/26	13 40		0.0	32.0	140	2	350	4	346	4.3	62	68
75/04/02	13 40		0.0	32.0	31	2K	100	2	98	14.0	69	68
75/04/17	11 00		0.0	32.0	1700	8	130	16	114	29.0	40	25
75/05/01	12 00		1.1	34.0	64	5	99	41	58	25.0	26	17
75/05/08	12 00		8.9	48.0	39	2K	81	22	59	13.0	24	18
75/05/15	12 00		8.9	48.0	230	8	59	7	52	5.0	33	21
75/05/22	11 30		17.8	64.0	350	110	80	3	77	4.3	47	40
75/06/18	13 15		17.2	63.0	460	17	97	2	95	5.6	46	42

STORET RETRIEVAL DATE 75/03/18

.019 MPCA023 G3-0.8
47 08 24.0 091 27 24.0
GOOSEBERRY R. NEAR CASTLE DANGER
27 MINNESOTA
LAKE SUPERIOR BASIN
LAKE SUPERIOR BASIN IN MINNESOTA
21MINN 2111204
2 0999 FEET DEPTH

DATE FROM TO	TIME	DEPTH OF DAY	FEET	00400 PH SU	00300 DO MG/L	00310 BOD 5 DAY MG/L	00665 PHOS-TOT MG/L P	00610 NH3-N TOTAL MG/L	00615 NO2-N TOTAL MG/L	00620 NO3-N TOTAL MG/L	00605 ORG N P MG/L	00600 TOTAL N N MG/L	00095 CNDUCTVY AT 25C MICROMHO
73/03/24	13	30		8.00	13.9	0.5	0.020						95
73/03/25	12	20		8.00	6.8	0.5K	0.030	0.110	0.010	0.100K	0.820	0.94	94
73/03/12	13	30		7.80	13.0	0.9	0.020	0.050K	0.010	0.100K	0.700	0.71	97
73/03/25	13	30		7.70	13.2	0.9	0.020	0.080	0.010	0.100K	0.670	0.76	100
73/03/26	14	00		7.60	11.2	0.5K	0.010	0.180	0.010	0.100	1.100	1.40	61
73/11/13	11	30		7.70	13.9	0.6	0.020	0.190	0.010K	0.240	0.590	1.00	90
73/12/30	14	15		8.00	14.0	0.6	0.040	0.110	0.010K	0.240	0.560	0.69	93
74/01/24	14	30		7.80	14.3	0.6	0.060	0.140	0.010	0.110	0.340	0.60	130
74/02/25	14	00		7.50	13.1	0.5K	0.040	0.050K	0.010K	0.370	0.630	1.00	140
74/03/12	14	00		7.40	14.0	0.5K	0.030	0.050K	0.010K	0.470	0.410	0.89	120
74/04/24	12	15		7.40	14.2	1.7	0.040	0.120	0.010K	0.590	0.310	0.82	120
74/06/04	11	00		7.70	13.0	0.6	0.020	0.050K	0.020	0.300	0.410	0.79	110
74/06/24	12	00		7.50	13.9	1.8	0.030	0.050K	0.020	0.100K	0.640	0.83	43
74/08/01	12	25		7.90	11.8	0.5K	0.020	0.050K	0.020	0.100K	0.580	0.60	58
74/09/15	14	00		7.20	12.0	0.8	0.050	0.050K	0.030	0.100K	0.500	0.53	44
74/10/16	11	00		7.00	10.1	1.7	0.040	0.360	0.010K	0.100K	0.950	1.33	76
74/11/20	14	00		8.10	9.7	1.4	0.020	0.080	0.010	0.100K	0.530	0.57	130
74/03/13	11	30		8.00	9.1	1.2	0.030	0.050K	0.050	0.320	0.340	0.71	120
74/04/12	12	00		7.80	10.1	0.5K	0.020	0.110	0.010	0.100K	0.530	0.65	140
74/05/03	09	00		8.00	12.2	0.9	0.020	0.050K	0.010	0.100K	0.720	0.23	130
74/11/20	14	30		7.10	13.2	1.7	0.030	0.050K	0.040	0.100K	0.620	0.66	100
74/12/21	14	30		7.10	13.9	0.5K	0.020	0.050K	0.030	0.350	0.790	1.13	160
73/03/10	13	10		7.60	14.0	1.0	0.030	0.130	0.040	0.780	0.130	1.11	100
73/06/26	13	00		7.50	14.0	0.7	0.020	0.050K	0.070	0.480	0.470	0.88	130
73/09/03	13	00		7.50	13.7	0.9	0.030	0.440	0.040	0.270	0.600	1.35	110
73/06/27	11	00		7.00	13.0	0.5	0.030	0.090	0.030	0.430	0.720	1.31	67
73/07/31	12	00		7.60	13.8	0.7	0.020	0.050K	0.030	0.220	0.410	0.56	41
73/08/30	14	00		7.20	11.9	0.5	0.050	0.050K	0.030	0.140	0.620	0.79	44
73/09/13	12	00		7.60	13.7	0.8	0.040	0.050K	0.040	0.100K	0.460	0.50	65
73/09/22	14	00		7.10	9.5	0.7	0.020	0.070	0.020	0.100K	0.550	0.64	81
73/10/16	13	15		7.50	9.0	1.1	0.030	0.050K	0.020	0.100K	1.700	1.72	86

STORET RETRIEVAL DATE 75/09/15

017 MPCA023 GR-3.3
47 09 24.0 091 27 24.0
GOOSEBERRY R. NEAR CASTLE DANGER
27 MINNESOTA
LAKE SUPERIOR BASIN
LAKE SUPERIOR BASIN IN MINNESOTA
21MINN 2111204
2 0999 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	00940 CHLORIDE CL MG/L	00945 SULFATE SO4-TOT MG/L	00950 FLUORIDE F.DISS MG/L	01042 COPPER CU.TOT UG/L	01027 CADMIUM CD.TOT UG/L	01067 NICKEL NI.TOTAL UG/L	01092 ZINC ZN.TOT UG/L	01051 LEAD PB.TOT UG/L	01045 IRON FE.TOT UG/L	01055 MANGNESE MN UG/L
72/11/28	13 30		2		0.10						750	11.0
72/12/20	12 20		1K		0.15	10K	10K	10K	20	10K	910	56.0
73/01/12	11 00		2			15	10K	10K	45	10K	610	10.0K
73/02/25	13 30		5	11	0.12	10K	10K	10K	11	10K	760	13.0
73/10/15	13 25		2								1400	10.0
73/11/13	13 30		4			10K	10K	10K	10K	10K	920	10.0K
73/12/04	13 15		2		0.09	10K	10K	10K	130	13	560	10.0K
74/01/28	14 00		3	11	0.11						630	10.0
74/02/20	13 45		1	13	0.10	10K	10K	10K	10K	10K	630	10.0K
74/03/12	13 00		2		0.13						440	5.0K
74/04/02	12 15		1	12	0.14							
74/04/03	11 00		2	13	0.12	10K	10K	10K	10K	10K	650	24.0
74/04/24	12 00		4	5K	0.10K	17	10K	10K	32	13	4900	130.0
74/05/03	12 25		5	13	0.10K	10K	10K	10K	39	10K	850	21.0
74/05/13	14 30		1	7	0.10	10K	10K	10K	23	22	2000	10.0K
74/05/18	11 45		4	12	0.10	10K	10K	10K	11	10K	650	40.0
74/07/10	14 00		4	11	0.10	10K	10K	10K	10K	10K	100	10.0K
74/08/13	11 00		4	9	0.13	10K	10K	10K	11	10K	670	10.0K
74/09/16	12 00		1K	9	0.15	10K	10K	10K	10K	10K	330	10.0K
74/10/13	09 40		2	8	0.15	10K	10K	10K	10K	10K	500	67.0
74/11/13	09 30		3	10	0.12	10K	10K	11	14	10K	1300	10.0K
74/12/11	13 30		5	9	0.23	10K	10K	10K	10K	10K	530	14.0
75/01/14	13 15		3	13	0.10K	10K	10K	10K	43	10K	2200	10.0K
75/02/25	13 40		2	9	0.13	10K	10K	10K	12	10K	440	10.0K
75/04/22	13 40		2	10	0.15	10K	10K	10K	15	10K	40	42.0
75/04/17	11 00		4	10	0.10K	10K	10K	10K	15	10K	1900	10.0K
75/05/31	12 00		2	9	0.07	10K	10K	10K	25	13	6[illegible]00	18.0
75/06/23	12 00		1	8	0.10K	10K	10K	13	54	10K	4300	150.0
75/07/23	12 00		3	12	0.33	10	10K	10K	300	12	790	140.0
75/08/22	11 30		5	9	0.11	10K	10K	10K	100	10K	470	33.0
75/09/15	13 15		1	9	0.10	13	10K	10K	10K	10K	260	10.0K

STORET RETRIEVAL DATE 75/09/18

C19 MPCAC23 GR-0.8
47 08 24.0 091 27 24.0
GOOSEBERRY R. NEAR CASTLE DANGER
27 MINNESOTA
LAKE SUPERIOR BASIN
LAKE SUPERIOR BASIN IN MINNESOTA
21MINN 2111204
2 0959 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	00910 CALCIUM CACO3 MG/L	00930 SODIUM NA,DISS MG/L	00935 PTSSIUM K,DISS MG/L	32730 PHENOLS TOTAL UG/L	00955 SILICA DISOLVED MG/L	00061 STREAM FLOW, INST-CFS
75/07/24	13 30		31.0	4.00	1.00K	30	9.6	36
75/08/29	12 20		40.0	7.00	1.00K	2K	11.0	52
75/09/12	15 00		50.0	2.00	1.00K	13	14.0	24
75/09/25	13 30		40.0	3.00	1.00K	4	11.0	47
75/10/10	13 25					6	12.0	277
75/11/13	13 30					2K	11.0	176
75/12/04	13 15					2K	12.0	33
75/01/29	14 00		45.0	6.10	1.00	4	14.0	39
75/02/26	13 45		50.0	4.00	1.00K	6	16.0	14
75/03/12	13 00		43.0	5.60	0.90	2K	17.0	19
75/04/02	12 15		42.0	6.60	2.10	7	15.0	16
75/04/09	11 00		40.0	7.30	1.90	2K	15.0	17
75/04/24	12 00		12.0	2.30	1.00K	2K	12.0	253
75/05/13	12 25		24.0	1.50	1.10	4	6.0	149
75/05/15	14 30		14.0	2.00	1.00K	2	8.5	57
75/05/18	11 45		27.0	3.50	0.70	11	8.0	56
75/07/10	14 00		55.0	2.40	1.10	6	9.7	8
75/08/13	11 00		45.0	2.20	1.00K	2K	8.1	15
75/09/12	12 00		54.0	3.20	1.00K	2	8.0	6
75/10/08	09 40		50.0	5.30	1.00K	5	11.0	17
75/11/05	09 30		25.0	4.40	1.60	7	11.0	34
75/12/11	13 30		67.0	4.90	4.40	2K	13.0	37
75/01/15	13 10		33.0	2.40	1.40	2K	12.0	4
75/02/25	13 40		38.0	4.90	3.40	2K	14.0	5
75/03/02	13 40		41.0	2.90	0.60	2K	12.0	10
75/04/17	11 00		25.0	1.30	1.00K	7		6
75/05/01	12 00		19.0	0.30	0.60	2K	6.9	869
75/05/08	12 00		15.0	0.80	1.00	10	6.6	452
75/05/15	12 00		20.0	1.10	0.50	4	6.5	37
75/05/22	11 30		35.0	2.10	0.90	7	5.5	26
75/05/18	13 15		34.0	2.40	0.60	4	6.7	191

STORET RETRIEVAL DATE 75/10/15

019 MPCA023 GA-0.8
47 08 24.0 091 27 24.0
GOOSEBERRY R. NEAR CASTLE DANGER
27 MINNESOTA
LAKE SUPERIOR BASIN
LAKE SUPERIOR BASIN IN MINNESOTA
21MINN 2111204
2 0999 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	00720 CYANIDE CN-TOT MG/L	00535 COL LOWLEVEL MG/L	00560 T ORG C C MG/L	01002 ARSENIC AS,TOT UG/L	01007 BARIUM BA,TOT UG/L	01034 CHROMIUM CR,TOT UG/L	71900 MERCURY HG,TOTAL UG/L	01147 SELENIUM SE,TOT UG/L	00920 MGNSIUM CACO3 MG/L
73/08/29	12 20				17.7						
73/09/12	15 00				19.7				0.1K		
73/09/25	13 30		0.005K	50.0K	16.6	10K	20K	2K	0.5	2K	32.0
73/10/16	13 25				24.9				0.2		
73/12/04	13 15				9.7				0.5		
74/02/26	13 45		0.005K	50.0K		10K	20K	2	0.3	2K	10.0
74/03/12	13 00				8.5				0.5		
74/04/09	11 00				7.5						
74/04/24	12 00		0.005K	50.0K		10K	10K	80	2.4	2K	6.0
74/05/08	12 25				7.0						
74/05/15	14 00				12.0						
74/05/18	11 45				9.7						
74/09/12	12 00		0.005K	50.0K		10K	15K	2K	0.1	2K	12.0
75/02/26	13 40		0.005K	23.0	9.0	10K	15K	1	0.1K	2K	24.0
75/05/01	12 00		0.005K	43.0	13.0	10K	15K	21	0.1	2K	8.0

STORET RETRIEVAL DATE 75/09/18

019 MPCA023 GR-0.8
47 08 24.0 091 27 24.0
GOOSEBERRY R. NEAR CASTLE DANGER
27 MINNESOTA
LAKE SUPERIOR BASIN
LAKE SUPERIOR BASIN IN MINNESOTA
21MINN 2111204
2 0999 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	03501 BETA TOTAL PC/L	03502 BETA-T ERROR PC/L	07000 H-3 TOTAL PC/L	07001 H-3,TOTL ERROR PC/L	13501 SR-90 TOTAL PC/L	13502 SR-90 ERROR PC/L	09501 RA-226 TOTAL PC/L	09502 RA-226 ERROR PC/L	39370 DDT WHL SMPL UG/L	00550 OIL-GRSE TOT-SXLT MG/L
73/09/25	13 30		6	3	240.0K		0.9	0.2	8.0K		0.010K	0.5K
74/02/26	13 45		3K		480.0	170.0	1.1	0.3	13.0K			1.7
74/04/24	12 00		4	4	500.0	190.0	0.2K		12.0K		0.100K	0.5K
74/09/12	12 00		3	3	570.0	170.0	0.8	0.2	3.0K			0.5K
75/02/25	13 40		3	3	450.0	200.0	0.4	0.2	3.0K		0.020	0.5K
75/05/01	12 00		9	3	250.0	180.0	0.7	0.2	2.0K		0.010K	0.5

STORET RETRIEVAL DATE 75/09/14

018 MPCA022 KN-0.2
46 57 05.0 092 46 48.0
KNIFE R. AT KNIFE RIVER
27 MINNESOTA
LAKE SUPERIOR BASIN
LAKE SUPERIOR BASIN IN MINNESOTA
21MINN 2111204
2 0999 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	00010 WATER TEMP CENT	00011 WATER TEMP FAHR	31505 TOT COLI MPN CONF /100ML	31615 FEC COLI MPNECMED /100ML	00500 RESIDUE TOTAL MG/L	00530 RESIDUE TOT NFLT MG/L	00515 RESIDUE DISS-105 C MG/L	00070 TURB JKSN JTU	00900 TOT HARD CACO3 MG/L	00410 T ALK CACO3 MG/L
74/07/22	12 30		17.2	63.0	1300	70		4		4.2	61	72
74/07/23	10 30		23.0	77.0	450	23				3.2	100	74
74/07/16	13 30		16.7	62.0	1300	22		2		3.5	70	59
74/07/29	11 30		15.0	59.0	2200	33		1		2.7	84	64
74/08/19	11 00		7.0	44.0	950	27		2		9.8		33
74/08/13	12 00		8.5	55.0	230	33		3		5.1		50
74/07/30	14 30		8.0	52.0	490	170		7		16.0	44	60
74/06/27	13 00		9.0	52.0	130	49	120	3	117	2.3	74	85
74/07/25	12 30		8.0	52.0	130	49	110	0.4	110	2.3	85	64
74/08/12	14 15		8.0	52.0	170	23	120	5	115	3.0	80	90
74/08/02	13 30		8.0	52.0	450	80	120	0.4	120	2.3	82	80
74/08/26	09 45		8.0	52.0	1300	1300	130	10	120	13.0	71	80
74/06/27	13 30		2.0	37.0	220	13	PR	22	66	25.0	23	12
74/07/31	13 00		5.7	42.0	70	49	91	3	78	12.0	35	22
74/08/13	10 00		7.2	45.0	170	49	99	24	74	28.0	25	16
74/08/26	13 45		13.0	56.0	350	130	91	4	87	6.1	44	39
74/07/24	13 30		21.7	71.0	350	22	100	5	94	2.0	69	50
74/08/19	09 45		17.2	63.0	1100	23	110	3	107	3.3	55	64
74/08/12	14 45		11.1	52.0	790	790	110	2	98	1.1	64	57
74/07/11	13 30		8.7	48.0	3500	17	120	9	111	2.5	70	73
74/07/10	15 45		2.8	37.0	2400	490	140	2	138	12.0	52	43
74/06/21	13 30		8.0	52.0	79	2	150	5	144	1.5	100	98
75/08/11	13 30		8.0	52.0	16000	490	150	8	142	35.0	48	35
74/07/20	14 30		9.0	52.0	33	13	380	4	376	2.7	77	72
74/08/26	17 00		8.0	52.0	140	23	150	4	146	40.0	61	50
74/06/17	13 00		8.0	52.0	2200	79	140	24	116	45.0	39	26
74/07/31	13 30		1.1	34.0	230	170	100	33	67	25.0	29	19
74/05/01	13 30		10.0	50.0	230	33	80	12	68	11.0	28	22
74/08/19	13 45		12.2	54.0	310	8	81	4	77	10.1	35	30
74/07/22	13 00		13.9	57.0	330	17	91	4	87	4.7	53	48
74/06/18	13 00		17.2	63.0	5400	33	132	6	126	27.0	45	42

STORET RETRIEVAL DATE [illegible]

015 MPCA022 KN-3.2
[illegible]
KNIFE R. AT KNIFE RIVER
27 MINNESOTA
LAKE SUPERIOR BASIN
LAKE SUPERIOR BASIN IN MINNESOTA
21MINN 2111204
2 0999 FEET DEPTH

DATE FROM TO	TIME	DEPTH OF DAY	FEET	00400 PH SU	00300 DO MG/L	00310 BOD 5 DAY MG/L	00665 PHOS-TOT MG/L P	00610 NH3-N TOTAL MG/L	00615 NO2-N TOTAL MG/L	00620 NO3-N TOTAL MG/L	00625 ORG N N MG/L	00600 TOTAL N N MG/L	00095 CONDUCTVY AT 25C MICROMHO
[illegible]	[illegible]			[illegible]	[illegible]	[illegible]	[illegible]						140
[illegible]	[illegible]			[illegible]	[illegible]	[illegible]	[illegible]	0.190	0.010	0.100K	0.660	0.79	130
[illegible]	[illegible]			[illegible]	[illegible]	[illegible]	[illegible]	0.090	0.010	0.100K	0.810	0.91	110
[illegible]	[illegible]			[illegible]	[illegible]	[illegible]	[illegible]	0.060	0.010K	0.100K	0.560	0.63	120
[illegible]	[illegible]			[illegible]	[illegible]	[illegible]	[illegible]	0.080	0.010K	0.100K	0.940	1.10	74
[illegible]	[illegible]			[illegible]	[illegible]	[illegible]	[illegible]	0.140	0.013	0.100	0.630	0.75	110
[illegible]	[illegible]			[illegible]	[illegible]	[illegible]	[illegible]	0.090	0.130	0.050K	0.360	0.63	100
[illegible]	[illegible]			[illegible]	[illegible]	[illegible]	[illegible]	0.110	0.010	0.140	0.480	0.69	150
[illegible]	[illegible]			[illegible]	[illegible]	[illegible]	[illegible]	0.050K	0.010K	0.100	0.620	0.79	170
[illegible]	[illegible]			[illegible]	[illegible]	[illegible]	[illegible]	0.050K	0.010K	0.100	0.360	0.73	200
[illegible]	[illegible]			[illegible]	[illegible]	[illegible]	[illegible]	0.110	0.010K	0.550	0.330	0.79	150
[illegible]	[illegible]			[illegible]	[illegible]	[illegible]	[illegible]	0.050K	0.010	0.400	0.370	0.79	150
[illegible]	[illegible]			[illegible]	[illegible]	[illegible]	[illegible]	0.050K	0.010	0.240	0.710	0.97	51
[illegible]	[illegible]			[illegible]	[illegible]	[illegible]	[illegible]	0.050K	0.010	0.100K	0.660	0.66	72
[illegible]	[illegible]			[illegible]	[illegible]	[illegible]	[illegible]	0.050K	0.040	0.130	0.760	0.91	57
[illegible]	[illegible]			[illegible]	[illegible]	[illegible]	[illegible]	0.150	0.010K	0.170	0.960	1.17	84
[illegible]	[illegible]			[illegible]	[illegible]	[illegible]	[illegible]	0.110	0.010	0.100K	0.550	0.65	140
[illegible]	[illegible]			[illegible]	[illegible]	[illegible]	[illegible]	0.690	0.050	0.490	0.200	0.69	140
[illegible]	[illegible]			[illegible]	[illegible]	[illegible]	[illegible]	0.150	0.010	0.100K	0.410	0.57	150
[illegible]	[illegible]			[illegible]	[illegible]	[illegible]	[illegible]	0.170	0.010K	0.250	0.070	0.49	150
[illegible]	[illegible]			[illegible]	[illegible]	[illegible]	[illegible]	0.050K	0.050	0.130	0.560	0.76	120
[illegible]	[illegible]			[illegible]	[illegible]	[illegible]	[illegible]	0.050K	0.033	0.230	0.580	0.84	200
[illegible]	[illegible]			[illegible]	[illegible]	[illegible]	[illegible]	0.170	0.050	0.450	0.620	1.27	140
[illegible]	[illegible]			[illegible]	[illegible]	[illegible]	[illegible]	0.150	0.020	0.380	0.370	0.92	170
[illegible]	[illegible]			[illegible]	[illegible]	[illegible]	[illegible]	0.110	0.050	0.230	0.610	0.95	140
[illegible]	[illegible]			[illegible]	[illegible]	[illegible]	[illegible]	0.090	0.050	0.330	0.740	1.21	67
[illegible]	[illegible]			[illegible]	[illegible]	[illegible]	[illegible]	0.050	0.040	0.180	0.410	0.66	45
[illegible]	[illegible]			[illegible]	[illegible]	[illegible]	[illegible]	0.050K	0.050	0.100K	0.640	0.67	51
[illegible]	[illegible]			[illegible]	[illegible]	[illegible]	[illegible]	0.050K	0.040	0.120	0.500	0.66	71
[illegible]	[illegible]			[illegible]	[illegible]	[illegible]	[illegible]	0.050	0.010	0.100K	0.400	0.47	98
[illegible]	[illegible]			[illegible]	[illegible]	[illegible]	[illegible]	0.090	0.030	0.120	0.940	1.15	87

STORET RETRIEVAL DATE 75/09/13

018 MPCA022 KN-0.2
45 57 03.0 091 45 48.0
KNIFE R. AT KNIFE RIVER
27 MINNESOTA
LAKE SUPERIOR BASIN
LAKE SUPERIOR BASIN IN MINNESOTA
21MINN 2111204
2 0999 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	00940 CHLORIDE CL MG/L	00945 SULFATE SO4-TOT MG/L	00950 FLUORIDE F,DISS MG/L	01042 COPPER CU,TOT UG/L	01027 CADMIUM CD,TOT UG/L	01067 NICKEL NI,TOTAL UG/L	01092 ZINC ZN,TOT UG/L	01051 LEAD PB,TOT UG/L	01045 IRON FE,TOT UG/L	01055 MANGNESE MN UG/L
75/07/24	12 30		7		0.10						210	10.0K
75/04/23	16 30		8		0.10	10K	10K	10K	16	10K	227	186.0
75/04/12	13 30		4		0.10K	10K	10K	10K	150	10K	610	10.0K
75/04/25	11 30		8	11	0.10	10K	10K	10K	10K	10K	340	10.0K
75/05/15	11 45		2								1200	10.0K
75/11/13	12 00		7			10K	10K	10K	10K	10K	550	10.0K
75/12/30	13 00		1		0.09	10K	10	10K	10	10K	1600	24.0
75/03/29	13 45		5	10	0.10						330	5.0K
75/03/25	12 00		3	12	0.10K	10K	10K	10K	10K	10K	190	10.0K
75/03/12	11 15		14		0.11						170	5.0K
75/04/02	13 30		8	13	0.13							
75/04/04	09 45		14	15	0.21	10K	10K	10K	10K	10K	630	29.0
75/04/29	13 30		5	5K	0.10K	10K	10K	10K	10K	10K	3300	91.0
75/05/03	13 00		5	13	0.10K	10K	10K	10K	10K	10K	990	13.0
75/05/15	10 00		1	5	0.10K	10K	10K	10K	34	10K	2900	10.0K
75/05/15	11 45		5	11	0.10K	10K	10K	10K	11	10K	490	32.0
75/05/15	13 30		7	11	0.13	10K	10K	10K	10K	10K	220	10.0K
75/05/15	07 45		8	9	0.13	10K	10K	10K	10	10K	390	10.0K
75/06/12	14 45		5	7	0.13	10K	10K	10K	10K	10K	120	10.0K
75/11/13	13 30		5	9	0.12	10K	10K	10K	10K	10K	140	10.0K
75/11/24	13 45		6	17	0.11	10K	10K	10K	10	10K	1700	150.0
75/12/11	13 30		13	13	0.19	10K	10K	10K	10K	10K	140	10.0K
75/01/14	13 45		6	19	0.10K	13	10K	10K	40	10K	190	15.0
75/02/26	14 30		11	11	0.14	10K	10K	10K	11	10K	190	10.0K
75/03/26	17 45		8	14	0.10	100	10K	10K	23	10K	2400	30.0
75/04/17	13 30		5	11	0.10K	10K	10K	10K	19	10K	3100	46.0
75/05/01	13 30		3	9	0.05	23	10K	10K	20	11	1900	12.0
75/05/13	13 30		2	9	0.10K	10K	10K	10K	33	10K	1200	18.0
75/05/15	13 45		3	6		10K	10K	10K	38	10K	950	100.0
75/05/22	13 00		6	9	0.10	10K	10K	10K	24	10K	360	27.0
75/05/16	15 00		5	5K	0.18	10K	10K	10K	12	10K	1600	16.0

STORET RETRIEVAL DATE 75/09/18

018 MPCA022 KN-0.2
46 57 03.0 091 45 48.0
KNIFE R. AT KNIFE RIVER
27 MINNESOTA
LAKE SUPERIOR BASIN
LAKE SUPERIOR BASIN IN MINNESOTA
21MINN 2111204
2 0999 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	00910 CALCIUM CA,DISS MG/L	00930 SODIUM NA,DISS MG/L	00935 POTSSIUM K,DISS MG/L	32730 PHENOLS TOTAL UG/L	00955 SILICA DISOLVED MG/L	00061 STREAM FLOW, INST-CFS
74/07/24	12 30		52.0	6.00	1.00K	5K	8.5	58
74/08/28	10 30		56.0	10.00	1.00K	4	11.0	20
74/09/12	13 30		56.0	2.00	1.00K		16.0	25
74/09/22	14 30			5.00	1.00K		13.0	41
74/10/16	11 40		53.0			2K	15.0	93
74/11/13	12 00					6	13.0	30
74/12/04	11 00		24.0	6.00	1.00K	2K	15.0	35
74/01/22	13 45		50.0	3.00	2.10	2K	15.0	33
74/02/20	12 00		64.0	3.60	1.00K	9	16.0	16
74/03/12	11 15		54.0	16.00	2.70	2K	18.0	22
74/04/02	13 30		38.0	7.40	1.70	2K	17.0	19
74/04/30	09 45		50.0	4.80	2.20	2K	17.0	20
74/05/20	13 30		17.0	1.70	1.20	9	11.0	297
74/06/18	13 00		26.0	2.10	1.50	2K	7.9	172
74/07/15	10 00		14.0	2.50	1.00K	2K	12.0	65
74/08/13	10 45		23.0	5.90	1.70	25	11.0	54
74/09/10	13 30		28.0	3.80	1.40	6	10.0	9
74/10/15	09 45		40.0	3.00	1.00K	4	8.9	17
74/11/12	10 45		42.0	3.40	1.20	8	8.7	7
74/12/10	10 30		39.0	3.50	1.20	2K	14.0	19
74/01/30	13 45		35.0	4.30	1.10	8	13.0	41
74/02/11	13 30		09.0	3.10	1.00K	2K	15.0	5
74/03/19	13 35		33.0	4.80	1.00K	2K	16.0	130
74/03/25	14 30		43.0	3.30	2.30	3	15.0	1.
74/03/26	17 40		34.0	3.70	1.40	2K	12.0	50
74/04/17	13 30		21.0	2.30	1.20	2		155
74/05/31	13 30		13.0	1.10	0.70	3	7.1	1030
74/05/03	13 30		10.0	1.10	2.10	2K	7.6	475
74/07/19	13 45		23.0	2.10	0.65	3	8.8	42
74/08/22	13 00		38.0	3.50	0.90	2	8.3	30
74/06/16	13 00		36.0	3.10	1.00	10	9.2	220

STORET RETRIEVAL DATE 75/10/15

018 MPCA022 KN-0.2
46 57 03.0 091 46 48.0
KNIFE R. AT KNIFE RIVER
27 MINNESOTA
LAKE SUPERIOR BASIN
LAKE SUPERIOR BASIN IN MINNESOTA
21MINN 2111204
2 0999 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	00720 CYANIDE CN-TOT MG/L	00335 COD LOWLEVEL MG/L	00680 T ORG C C MG/L	01002 ARSENIC AS,TOT UG/L	01007 BARIUM BA,TOT UG/L	01034 CHROMIUM CR,TOT UG/L	71900 MERCURY HG,TOTAL UG/L	01147 SELENIUM SE,TOT UG/L	00920 MGNSIUM CACO3 MG/L
73/09/12	13 50				21.5						
73/09/26	11 30		0.005K	54.0	18.3	10K	20K	2K	0.8		
73/10/16	11 40				22.7				0.5		
73/11/13	12 00				9.8				0.3		
73/12/04	11 00				8.7						
74/02/26	12 00		0.005K	50.0K		10K	20K	2	2.1		
74/05/12	11 15				5.7				0.3	2K	21.0
74/06/04	09 45				7.5						
74/06/24	13 30		0.005K	50.0K		10K	10K	2K	1.0	2K	6.0
74/08/08	13 05				10.0						
74/09/15	16 00				13.5						
74/06/18	10 45				8.8						
74/09/12	14 45		0.005K	50.0K		10K	15K	2K	0.1	2K	15.0
75/02/26	14 50		0.005K	17.0	9.0	10K	15K	1	0.1K	2K	32.0
75/05/01	13 00		0.005K	35.0	15.0	10K	15K	5	0.1K	2K	10.0

STORET RETRIEVAL DATE 75/09/18

018 MPCA022 KN-0.2
46 57 03.0 091 46 48.0
KNIFE R. AT KNIFE RIVER
27 MINNESOTA
LAKE SUPERIOR BASIN
LAKE SUPERIOR BASIN IN MINNESOTA
21MINN 2111204
2 0999 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	03501 BETA TOTAL PC/L	03502 BETA-T ERROR PC/L	07000 H-3 TOTAL PC/L	07001 H-3,TOTL ERROR PC/L	13501 SR-90 TOTAL PC/L	13502 SR-90 ERROR PC/L	09501 RA-226 TOTAL PC/L	09502 RA-226 ERROR PC/L	39370 ODT WHL SMPL UG/L	00550 OIL-GRSE TOT-SXLT MG/L
73/09/25	11 30		7	3	690.0	350.0	0.7	0.2	7.7K		0.010K	0.5K
74/02/26	12 00		5	3	800.0	230.0	0.9	0.2	12.0K		0.050K	1.2
74/04/24	13 30		4K		400.0	190.0	0.3	0.2	11.0K		0.100K	1.7
74/09/12	14 45		3K		490.0	170.0	0.7	0.2	3.0K			0.5K
75/02/26	14 50		2K		440.0	200.0	0.8	0.3	3.0K		0.030	0.8
75/05/01	13 00		5	3	290.0	180.0	0.5	0.2	2.0K		0.010K	0.5K

STORET RETRIEVAL DATE 75/09/19

015 MPCA019 LE-0.2
46 50 12.0 092 00 18.0
LESTER R. AT DULUTH
27 MINNESOTA
LAKE SUPERIOR BASIN
LAKE SUPERIOR BASIN IN MINNESOTA
21MINN 2111204
2 6999 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	00010 WATER TEMP DEGT	00011 WATER TEMP FAHR	31505 TOT COLI MPN CONF /100ML	31615 FEC COLI MPNECMED /100ML	00500 RESIDUE TOTAL MG/L	00530 RESIDUE TOT VFLT MG/L	00515 RESIDUE DISS-105 C MG/L	00070 TURB JKSN JTU	00900 TOT HARD CACO3 MG/L	00410 T ALK CACO3 MG/L
75/07/23 10 05			18.3	65.0	24000L	1700						
75/07/24 10 30			21.5	70.0	350	49		12		14.0	74	82
75/07/12 09 30			13.8	57.0	490	17		5		5.0	110	77
75/07/25 08 45			12.2	54.0	330	33		2		1.0	130	48
75/08/15 10 30			8.0	46.0	5400	79		3		4.0	110	78
75/11/12 10 00			0.5	33.0	490	79		4		3.4	44	40
75/12/04 09 00			0.0	32.0	790	33		0.5K		1.4	67	74
75/01/23 10 15			0.0	32.0	1700	490	130	4	127	3.7	45	61
75/02/25 09 00			0.0	32.0	79	13	130	3	130	1.3	50	75
75/03/12 09 00			0.0	32.0	170	49	130	0.4	130	1.1	86	87
75/04/02 09 00			0.0	32.0	80	20	130	1	129	2.9	110	100
75/04/04 09 45			0.0	32.0	490	170	130	0.4	130	1.2	84	90
75/04/22 10 30			1.7	35.0	170	33	120	7	113	13.0	75	80
75/05/09 10 10			7.9	46.0	79	8	130	52	66	25.0	25	17
75/05/15 11 00			7.2	45.0	330	49	78	3	75	8.0	33	28
75/05/17 10 00			13.3	56.0	330	20	66	13	53	6.0	29	25
75/07/04 10 45			24.4	76.0	3500	230	96	40	56	2.5	42	41
75/07/12 10 00			21.1	70.0	540	230	120	4	116	2.7	82	89
75/08/04 10 00			11.7	53.0	790	790	120	3	117	33.0	73	64
75/08/27 10 50			6.7	44.0	330	23	130	0.5K	130K	1.1	92	77
75/11/04 10 30			4.4	40.0	1100	70	130	4	126	1.3	88	98
75/12/04 10 30			0.0	32.0	33	8	120	0.5K	120	4.0	80	50
75/01/16 10 30			0.0	32.0	1300	130	150	3	147	5.0	96	86
75/02/20 10 00			0.0	33.0	14	2	130	4	126	22.0	70	55
75/03/25 10 30			0.0	32.0	170	33	130	1	129	1.4	80	90
75/04/15 10 00			1.1	34.0	490	70	130	0.5K	130	14.0	83	77
75/04/29 10 30			1.7	35.0	130	47	140	45	95	36.0	61	53
75/05/04 10 00			11.1	52.0	130	8	87	55	32	17.0	26	16
75/05/13 10 00			12.8	55.0	700	130	74	3	71	4.3	36	27
75/05/20 10 30			15.0	59.0	240	23	92	4	88	2.2	45	38
75/05/15 10 00			15.6	60.0	1800	79	96	2	94	1.1	53	61
							118	10	109	4.5	46	43

STREET & INTERVAL DATE 75/09/13

CIS MPCA019 LE-3.2
46 50 12.0 092 00 18.0
LESTER R. AT DULUTH
27 MINNESOTA
LAKE SUPERIOR BASIN
LAKE SUPERIOR BASIN IN MINNESOTA
21MINN 2111204
2 0999 FEET DEPTH

DATE FROM TO	TIME	DEPTH OF DAY	FEET	00400 PH SU	00300 DO MG/L	00310 BOD 5 DAY MG/L	00665 PHOS-TOT MG/L P	00610 NH3-N TOTAL MG/L	00613 NO2-N TOTAL MG/L	00620 NO3-N TOTAL MG/L	00625 ORG N MG/L	00630 TOTAL N N MG/L	00095 CNDUCTVY AT 25C MICROMHO
75/07/28	10 00			7.80	8.2	1.5	0.060						160
75/08/28	10 30			8.70	8.0	0.8	0.040	0.100	0.030	0.100K	0.860	1.00	140
75/09/16	09 30			7.70	8.6	0.9	0.020	0.180	0.010	0.100K	1.000	1.30	120
75/10/29	10 45			7.50	9.7	1.1	0.030	0.080	0.020	0.100K	0.670	0.77	140
75/11/13	10 30			7.50	10.7	0.8	0.060	0.070	0.010	0.120	1.200	1.30	79
75/12/12	10 30			7.40	12.4	0.5K	0.040	0.270	0.010K	0.120	0.810	1.20	120
76/01/28	09 00			7.60	13.0	0.8	0.150	0.050K	0.010	0.160	0.450	0.55	120
76/02/23	10 12			7.70	14.4	2.7	0.350	0.180	0.010	0.330	0.510	1.03	180
76/03/25	09 30			7.60	13.7	0.5K	0.070	0.050K	0.010K	0.590	0.620	1.21	190
76/04/12	09 30			7.70	14.2	0.5K	0.100	0.050K	0.020	0.520	0.450	0.99	220
76/05/05	09 00			7.50	14.5	3.0	0.030	0.110	0.010K	0.250	0.410	0.77	170
76/06/09	11 00			7.70	13.9	0.9	0.050	0.050K	0.020	0.240	0.500	0.76	150
76/06/22	10 30			7.80	13.7	1.3	0.110	0.080	0.040	0.050	0.900	1.07	52
76/07/13	13 10			7.50	13.9	2.0	0.020	0.050K	0.010K	0.100K	0.910	0.91	80
76/08/15	17 00			7.60	12.2	0.6	0.040	0.050	0.020	0.100K	0.640	0.71	59
76/09/17	15 45			7.80	10.0	0.7	0.030	0.130	0.010K	0.100K	1.100	1.23	90
76/10/21	10 45			8.10	8.6	1.1	0.040	0.320	0.010K	0.100K	0.950	1.31	160
76/11/12	10 00			7.90	8.1	0.8	0.030	0.100	0.030	0.100K	0.370	0.50	130
76/12/14	10 30			8.00	8.9	0.6	0.020	0.050	0.030	0.120	0.790	1.02	170
77/01/07	10 00			8.10	12.6	1.9	0.010K	0.080	0.010K	0.100K	0.230	0.31	170
77/02/04	10 30			7.80	13.0	0.5K	0.030	0.050K	0.030	0.050	0.550	0.64	120
77/03/04	10 30			7.60	14.6	0.5K	0.020	0.050K	0.010	0.150	0.530	0.69	200
77/04/14	13 30			7.80	13.2	2.4	0.050	0.140	0.020	0.460	0.450	1.07	150
77/05/20	10 10			8.10	14.8	0.5K	0.030	0.090	0.020	0.480	0.410	1.00	180
77/06/26	10 30			7.90	13.0	0.7	0.040	0.110	0.010	0.100K	0.600	0.72	240
77/07/13	14 45			7.70	12.8	0.8	0.140	0.050K	0.070	0.280	0.550	0.90	100
77/08/24	13 30			7.60	14.3	1.0	0.110	0.110	0.030	0.490	0.710	1.34	47
77/09/23	10 00			7.50	11.3	0.8	0.030	0.050	0.030	0.100K	0.620	0.70	62
77/10/13	13 30			7.50	10.3	1.8	0.030	0.050	0.030	0.160	0.580	1.07	79
77/11/20	13 30			7.70	9.0	0.5K	0.010	0.050K	0.020	0.110	0.590	0.72	100
77/12/16	14 00			7.60	8.8	2.1	0.050	0.060	0.040	0.100K	0.980	1.08	79

STORET RETRIEVAL DATE 75/09/19

015 MPCA019 LE-3.2
46 50 12.0 092 06 18.0
LESTER R. AT DULUTH
27 MINNESOTA
LAKE SUPERIOR BASIN
LAKE SUPERIOR BASIN IN MINNESOTA
21MINN 2111204
2 0999 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	00940 CHLORIDE CL MG/L	00945 SULFATE SO4-TOT MG/L	00950 FLUORIDE F,DISS MG/L	01042 COPPER CU,TOT UG/L	01027 CADMIUM CD,TOT UG/L	01067 NICKEL NI,TOTAL UG/L	01092 ZINC ZN,TOT UG/L	01051 LEAD PB,TOT UG/L	01045 IRON FE,TOT UG/L	01055 MANGNESE MN UG/L
74/07/23	14 00		8		0.10							
74/07/23	14 30		3		0.17	10K	10K	10K	18	10K	1100	40.0
74/07/22	08 00		3		0.10K	10K	10K	10K	130	10K	364	453.0
74/07/22	08 45		24	14	0.13	10K	10K	10K	10K	10K	450	10.0K
74/07/15	15 30		6								340	10.0K
74/11/12	13 30		2		0.13						1600	10.0
74/12/04	08 00		3		0.10	10K	10K	10K	130	10K	320	5.0
74/01/24	15 15		5	11	0.18						750	32.0
74/02/12	08 30		5	12	0.14	10K	10K	10K	10K	10K	240	5.0
74/03/12	08 30		21		0.24						250	10.0K
74/04/02	08 00		2	13	0.15						180	10.0
74/04/23	08 45		14	14	0.26	10K	10K	10K	10K	10K	740	19.0
74/04/22	14 30		4	13	0.10K	14	10K	10K	67	10K	6200	110.0
74/05/13	12 15		5	12	0.11	10K	10K	21	11	10K	650	19.0
74/05/15	17 30		7	14	0.10K	10K	10K	10K	27	10K	890	10.0K
74/05/17	14 45			5K	0.11	10K	10K	14	11	10K	590	21.0
74/07/31	09 45		4	7	0.15	75	10K	10K	150	10K	190	160.0
74/08/12	14 30		12	5K	0.17	10K	10K	10K	10K	10K	500	10.0K
74/08/06	14 30		10	9	0.15	10K	10K	10K	10K	10K	40	10.0K
74/10/07	14 30		4	12	0.13	10K	10K	10K	10K	10K	280	10.0K
74/11/04	14 30		8	11	0.84	10K	10K	14	10K	10K	590	10.0K
74/12/04	14 30		5	11	0.19	10K	10K	11	34	10K	140	10.0K
75/01/14	13 30		6	15	0.11	10	10K	10K	28	10K	1500	82.0
75/02/04	14 30		5	10	0.15	10K	10K	10K	37	10K	160	10.0K
75/03/10	14 30		4	11	0.14	10K	10K	10K	17	10K	940	41.0
75/04/15	14 45		3	11	0.10K	13	10K	14	20	10K	1700	93.0
75/05/06	13 30		5	9	0.10K	12	10K	10K	22	10K	1900	20.0
75/05/01	15 00		3	9	0.10K	10K	10K	10K	22	10K	350	10.0K
75/05/13	15 00		4	5	0.10K	13	10K	15	58	10K	800	10.0K
75/05/20	15 30		3	5K	0.17	10K	10K	10K	320	10K	190	10.0K
75/06/16	14 00		3	5K	0.18	10K	10K	10K	10K	10K	550	22.0

STORET RETRIEVAL DATE 75/09/13

015 MPCA019 LE-0.2
46 50 12.0 092 00 18.0
LESTER R. AT DULUTH
27 MINNESOTA
LAKE SUPERIOR BASIN
LAKE SUPERIOR BASIN IN MINNESOTA
21MINN 2111204
2 0999 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	00913 CALCIUM CACO3 MG/L	00930 SODIUM NA,DISS MG/L	00935 POTASSIUM K,DISS MG/L	32730 PHENOLS TOTAL UG/L	00955 SILICA DISSOLVED MG/L	00061 STREAM FLOW, INST-CFS
73/07/23	16 05		41.0	17.00	2.00	5K	5.3	[illegible]
73/08/23	14 30		34.0	12.00	1.00	2K	11.0	29
73/09/12	09 30		60.0	3.00	1.00K	4	12.0	35
73/09/25	03 45		55.0	5.00	1.00	4	12.0	13
73/10/15	15 30		40.0			1	13.0	2
73/11/12	15 00		32.0	7.00	1.00	5	14.0	21
73/12/04	09 00		25.0	6.00	1.00	2K	14.0	72
74/01/23	15 15		75.0	14.00	4.30	2K	16.0	15
74/02/25	09 00		53.0	5.20	1.00K	3	15.0	14
74/03/12	09 00		34.0	15.00	3.40	2K	18.0	26
74/04/02	09 00		55.0	6.30	1.70	2K	17.0	26
74/04/09	03 45		52.0	8.10	1.30	2K	16.0	29
74/04/22	14 30		15.0	2.00	3.90	2K	10.0	440
74/05/03	15 10		26.0	3.10	2.00	2	5.0	91
74/05/15	17 00		13.0	2.40	2.40	2K	9.0	130
74/05/17	15 45		27.0	2.30	1.80	35	9.0	98
74/07/03	14 45		59.0	2.40	1.10	2	8.1	2
74/08/12	14 00		53.0	3.20	1.00K	2	11.0	8
74/09/09	14 30		72.0	5.30	1.00	2K	5.7	3
74/10/07	14 30		75.0	8.60	1.20	2K	14.0	3
74/11/04	14 30		42.0	4.20	1.10	2	14.0	36
74/12/09	16 30		75.0	5.70	1.30	5	13.0	5
75/01/14	13 30		40.0	5.10	1.90	2	14.0	60
75/02/24	16 10		54.0	5.60	1.00K	4	15.0	7
75/03/25	15 30		43.0	4.90	1.90	10	14.0	34
75/04/15	14 45		34.0	3.00	1.00	4		101
75/04/24	15 30		17.0	1.30	0.70	18	7.8	372
75/05/05	15 00		22.0	1.40	1.00	5	6.9	292
75/05/13	15 00		26.0	2.00	1.40	14	6.4	25
75/05/20	15 30		34.0	3.20	0.80	2K	4.5	13
75/06/15	14 00		30.0	2.40	0.50K	3	8.2	67

STORET RETRIEVAL DATE 75/10/15

015 [illegible] 1[illegible]-0.2
[illegible] 50 12.0 [illegible] 00 18.0
[illegible] AT DULUTH
27 MINNESOTA
LAKE SUPERIOR BASIN
LAKE SUPERIOR BASIN IN MINNESOTA
21MINN 2111204
2 0999 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	00720 CYANIDE CN-TOT MG/L	00335 COD LOW LEVEL MG/L	00600 TOTAL C MG/L	01002 ARSENIC AS,TOT UG/L	01007 BARIUM BA,TOT UG/L	01034 CHROMIUM CR,TOT UG/L	71900 MERCURY HG,TOTAL UG/L	01147 SELENIUM SE,TOT UG/L	00920 MGNSIUM CACO3 MG/L
73/09/12	09 30				24.7				0.1		
73/09/25	08 45		0.005*	50.0*		10*	20*	8	0.4	2*	54.0
73/10/15	15 30				26.6				0.3		
73/11/12	15 00				16.5						
73/12/04	09 00				9.5						
74/01/28	16 15				17.3						
74/02/26	09 00		0.005*	130.0		10*	20*	2	0.2	2*	30.0
74/03/12	09 00				7.5						
74/04/09	08 45				9.5						
74/04/22	14 30		0.050*	50.0*	13.8	10*	45	15	0.1	2*	10.0
74/05/08	15 10				12.0						
74/05/15	17 00				13.5						
74/06/17	15 45				12.5				0.2		
74/08/12	14 00					10*				2*	
74/09/09	14 30		0.005*	50.0*		10*	20*	2*	0.1*	2*	20.0
75/02/24	16 10		0.005*	24.0	10.0	10*	15*	2	0.1*	2*	26.0
75/04/29	15 30		0.005*	33.0	14.0	10*	15*	4	0.1*	2*	11.0

STORET RETRIEVAL DATE 75/09/18
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015 MPCA319 EE-0.2
46 50 12.0 092 00 18.0
LESTER R. AT DULUTH
27 MINNESOTA
LAKE SUPERIOR BASIN
LAKE SUPERIOR BASIN IN MINNESOTA
21MINN 211120
2 0999 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	03501 BETA TOTAL PC/L	03502 BETA-T ERROR PC/L	07000 H-3 TOTAL PC/L	07001 H-3,TOTL ERROR PC/L	13501 SR-90 TOTAL PC/L	13502 SR-90 ERROR PC/L	09501 RA-226 TOTAL PC/L	09502 RA-226 ERROR PC/L	39370 DET MIN SMPL UG/L	00550 DIS-SOLD TOT-SALT MG/L
73/09/25	08 45		10	3	240.0A		0.9	0.2	6.0A		0.050	0.5A
74/02/26	09 00		3	3	410.0	240.0	1.0	0.2	12.0A		0.050A	2.3
74/04/22	14 30		5	4	280.0	170.0	0.9	0.2	11.0A		0.100A	1.3
74/09/09	14 30		3	3	360.0	170.0	1.0	0.2	3.0A			4.6
75/02/24	16 10		4	3	510.0	210.0	0.7	0.3	3.0A		0.010A	1.1
75/04/29	15 30		9	3	180.0A		0.3	0.2	3.0A		0.010A	3.4

STORET RETRIEVAL DATE 75/09/13

[illegible] MPCA127 MAN-1
47 [illegible]
[illegible] LITTLE MARIS
27 MINNESOTA
LAKE SUPERIOR BASIN
LAKE SUPERIOR BASIN IN MINNESOTA
ZIMINA [illegible]
2 [illegible] FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	00010 WATER TEMP CENT	00011 WATER TEMP FAHR	[illegible] TOT COLI MEN COND /100ML	[illegible] FEC COLI MENSCHED /100ML	[illegible] RESIDUE TOTAL MG/L	[illegible] RESIDUE TOT NFLT MG/L	[illegible] RESIDUE DISSOLVED MG/L	[illegible] TEMP DATA UTU	[illegible] TOT HARD CACO3 MG/L	00410 T ALK CACO3 MG/L
73/07/25	09 30		16.7	62.0	[illegible]	30		[illegible]		1.6	27	33
73/08/29	14 00		23.3	74.0	170	13		1		1.2		32
73/09/13	12 30		13.9	57.0	110	11		2		1.2	38	34
73/09/26	10 30		10.6	51.0	170	[illegible]		[illegible]		[illegible]	36	30
73/10/17	09 35		4.0	39.0	130	5		[illegible]		[illegible]		24
73/11/14	09 30		0.6	33.0	79	7		[illegible]		1.5	30	23
73/12/05	10 30		0.0	32.0	130	2K		[illegible]		1.2	14	47
74/01/30	10 00		0.0	32.0	[illegible]	2	72	[illegible]	71	[illegible]	32	51
74/02/27	11 45		0.0	32.0	140	5	110	[illegible]	110	1.2	55	40
74/03/13	09 45		0.0	32.0	23	2K	[illegible]	[illegible]	[illegible]	[illegible]	45	42
74/04/03	09 45		0.0	32.0	460	460	[illegible]	[illegible]	73	1.7	[illegible]	47
74/04/10	14 00		0.0	32.0	33	2	74	[illegible]	[illegible]	1.3	37	36
74/04/23	11 00		1.1	34.0	34	3	73	[illegible]	[illegible]	[illegible]	17	10*
74/05/07	10 40		2.5	37.0	17	2	[illegible]	1	54	[illegible]	20	10
74/05/14	11 50		3.3	38.0	79	2	54	[illegible]	48	[illegible]	15	10K
74/05/19	14 15		15.6	60.0	140	13	56	[illegible]	54	1.5	20	22
74/07/03	10 00		21.7	71.0	[illegible]	31	[illegible]	1	65	1.2	25	22
74/08/14	13 30		16.1	61.0	33	23	73	[illegible]	78	[illegible]	31	41
74/09/10	11 00		10.6	51.0	17	2	70	[illegible]	76	1.2	35	31
74/10/03	12 00		5.6	42.0	46	23	77	[illegible]	65	[illegible]	34	29
74/11/05	12 00		2.8	37.0	79	13	[illegible]	[illegible]	[illegible]	[illegible]	29	23
74/12/10	11 45		0.0	32.0	70	2K	87	[illegible]	86	[illegible]	41	41
75/01/16	09 45		0.0	32.0	70	20K	79	[illegible]	79	[illegible]	37	25
75/02/25	10 15		0.0	32.0	31	2	76	[illegible]	76	1.2	46	42
75/04/03	14 30		0.0	32.0	33	2	48	[illegible]	48	1.4	50	41
75/04/16	10 40		1.1	34.0	230	2K	55	[illegible]	55	[illegible]	48	34
75/05/01	09 45		1.1	34.0	130	23	69	[illegible]	67	[illegible]	29	17
75/05/03	09 45		4.4	40.0	330	14	61	[illegible]	53	5.3	19	10
75/05/15	10 00		7.2	45.0	230	2	54	[illegible]	49	1.5	25	14
75/05/22	09 30		15.0	59.0	170	13	59	0.5K	59	1.5	32	20
75/06/18	10 30		15.6	60.0	47	9	77	[illegible]	73	1.3	28	23

STORET RETRIEVAL DATE 75/09/13

DATE FROM TO	TIME OF DAY	DEPTH FEET	00400 PH SU	00300 OXY MG/L	00310 BOD 5 DAY MG/L	00665 PHOS-TOT MG/L P	00610 NH3-N TOTAL MG/L	00625 TOT KJEL TOTAL MG/L	00620 NO3-N TOTAL MG/L	00630 NO2-N TOTAL MG/L	00600 TOTAL N MG/L	00095 CNDUCTVY AT 25C MICROMHO
74/07/23	09 30		7.50	11.1	0.6	0.020						62
74/08/29	14 00		8.30	9.8	0.7	0.040	0.070	0.010	0.150	0.010	0.84	53
74/09/13	12 30		7.60	11.1	0.5K	0.010	0.070	0.040	0.140	0.020	0.86	63
74/09/26	10 30		7.50	10.5	0.9	0.030	0.110	0.030	0.130	0.020	0.79	58
74/10/17	09 35		7.30	12.5	0.5	0.020	0.050K	0.010	0.150	0.020	0.93	51
74/11/14	09 30		8.10	13.2	1.5	0.010	0.150	0.010	0.170	0.020	1.05	62
74/12/05	10 30		7.60	13.5	0.6	0.030	0.110	0.010	0.170	0.020	0.79	59
74/01/30	10 00		7.40	13.3	1.3	0.070	0.150	0.010	0.170	0.020	1.01	86
74/02/27	11 45		7.30	14.3	0.9	0.010K	0.050	0.010	0.130	0.020	0.81	95
74/03/13	09 45		6.70	14.6	0.9	0.030	0.050K	0.010	0.130	0.020	1.15	97
74/04/03	09 45		7.40	13.1	1.0	0.030	0.140	0.010	0.140	0.020	0.96	90
74/04/10	14 00		7.60	14.9	0.5K	0.020	0.050K	0.010	0.110	0.020	1.04	96
74/04/23	11 00		7.00	14.1	2.6	0.040	0.050K	0.030	0.150	0.020	0.97	63
74/05/07	10 40		7.40	13.4	2.0	0.050	0.050K	0.010	0.110	0.020	1.16	62
74/05/14	11 30		7.10	13.0	2.0	0.050	0.050K	0.010	0.150	0.020	0.81	96
74/06/19	14 15		7.40	9.0	0.6	0.020	0.140	0.010K	0.100K	0.020	1.22	69
74/07/09	10 00		7.50	8.5	0.5K	0.110	0.310	0.010K	0.220	0.020	0.64	93
74/08/14	13 30		7.60	9.3	0.7	0.080	0.050K	0.050	0.350	0.020	0.76	80
74/09/10	11 00		7.70	10.5	0.8	0.010K	0.140	0.040	0.100	0.020	0.59	69
74/10/03	12 00		7.70	12.0	0.6	0.020	0.050K	0.040	0.140	0.020	0.62	61
74/11/05	12 00		7.50	13.2	0.8	0.010	0.050K	0.020	0.150	0.020	0.99	77
74/12/10	11 45		7.50	14.4	0.6	0.010	0.050K	0.020	0.130	0.020	0.89	85
75/01/15	09 45		7.50	14.2	0.6	0.020	0.050	0.010	0.140	0.010	1.08	94
75/02/25	10 15		7.40	13.8	0.5	0.010	0.050K	0.010	0.150	0.020	0.79	79
75/04/05	14 30		7.70	14.8	0.7	0.020	0.050K	0.010	0.150	0.020	1.22	58
75/04/16	10 40		7.70	12.7	1.2	0.030	0.100	0.040	0.120	0.020	0.96	51
75/05/01	09 45		8.00	14.3	1.0	0.020	0.140	0.020	0.150	0.020	1.16	62
75/05/08	09 45		7.20	13.2	0.7	0.030	0.050K	0.030	0.120	0.020	1.02	59
75/05/15	10 00		6.70	12.8	1.0	0.010	0.060	0.040	0.140K	0.150	0.25	47
75/05/22	09 30		7.20	9.3	1.0	0.010K	0.050K	0.010	0.110	0.450	0.47	47
75/05/28	10 30		7.60	9.5	2.1	0.060	0.050K	0.020	0.100K	1.600	1.62	67

STORET RETRIEVAL DATE 75/09/18

023 MPLZ027 MAN-1
47 26 33.0 091 04 12.0
MANITOU R. NEAR LITTLE MARAIS
27 MINNESOTA
LAKE SUPERIOR BASIN
LAKE SUPERIOR BASIN IN MINNESOTA
21MINN 2111204
2 0999 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	00940 CHLORIDE CL MG/L	00945 SULFATE SO4-TOT MG/L	00950 FLUORIDE F,DISS MG/L	01042 COPPER CU,TOT UG/L	01027 CADMIUM CD,TOT UG/L	01067 NICKEL NI,TOTAL UG/L	01092 ZINC ZN,TOT UG/L	01051 LEAD PB,TOT UG/L	01045 IRON FE,TOT UG/L	01055 MANGNESE MN UG/L
73/07/25	09 30		2		0.20						330	25.0
73/08/23	14 00		3		0.23	10K	10K	10K	10K	15	500	89.0
73/09/13	12 30		2		0.17	10K	10K	10K	3	10K	19	10.0K
73/09/25	10 30		5	12	0.15	10K	10K	10K	15	10K	490	49.0
73/10/17	09 55		4		0.17						480	5.0
73/11/14	09 30		2								350	10.0
73/12/05	10 30		2		0.14	33	10K	10K	10K	15	110	10.0K
74/01/30	10 00		1	11	0.17						300	10.0
74/02/27	11 45		2	10	0.22	10K	10K	10K	16	10K	420	10.0K
74/03/13	09 45		2	10	0.20						310	5.0
74/04/03	09 45		3	10	0.22	10K	10K	10K	10K	10K	260	10.0K
74/04/10	14 00		3	11	0.19	10K	10K	10K	10K	10K	350	5.0
74/04/23	11 00		3	8	0.11	10K	10K	10K	10K	10K	1100	91.0
74/05/07	10 40		8	11	0.13	10K	10K	10K	11	10K	290	9.0
74/05/14	11 50		5	14	0.11	10K	10K	10K	11	10K	1000	10.0K
74/06/19	14 15		1K	5K	0.15	10K	10K	10K	10K	10K	190	13.0
74/07/09	10 00		4	12	0.18	10K	10K	10K	20	10K	210	21.0
74/08/14	13 30		1K	5K	0.21	10K	10K	11	10K	10K	370	21.0
74/09/10	11 00		2	9	0.27	10K	10K	10K	10	10K	290	12.0
74/10/03	12 00		2	8	0.17	13	10K	10K	10K	10K	340	10.0K
74/11/05	12 00		3	5K	0.23	10K	10K	10K	61	12	1100	10.0K
74/12/10	11 45		4	9	0.25	10K	10K	10K	10K	10K	250	15.0
75/01/15	09 45		3	11	0.16	10K	10K	10K	37	10K	250	10.0K
75/02/25	10 15		3	9	0.23	10K	10K	10K	10K	10K	210	10.0K
75/04/03	14 50		3	8	0.32	10K	10K	10K	15	12	210	10.0K
75/04/15	10 40		4	9	0.12	10K	10K	10K	29	10K	340	10.0K
75/05/01	09 45		1	10	0.09	10K	10K	10K	25	10K	750	76.0
75/05/03	09 45		1K	9	0.10	10K	10K	10K	140	10K	300	10.0K
75/05/15	10 00		3	8	0.11	17	10K	10K	120	10K	230	130.0
75/05/22	09 30		4	9	0.14	10K	10K	10K	57	10K	260	130.0
75/06/18	10 30		2	9	0.26	10K	10K	10K	10	10K	210	10.0K

STORET RETRIEVAL DATE 75/09/10

DATE FROM TO	TIME OF DAY	DEPTH FEET	00910 CALCIUM CA,DISS MG/L	00930 SODIUM NA,DISS MG/L	00935 POTASSIUM K,DISS MG/L	32730 PHENOLS TOTAL UG/L	00955 SILICA DISSOLVED MG/L	00931 STRONT. SR,DISS.
73/07/25	09	30	18.0	4.00	1.00	11	9.8	50
73/08/29	14	00	32.0	2.00	1.00K	2K	12.0	33
73/09/18	12	30	24.0	2.00	1.00K	4	13.0	44
73/09/26	10	30	28.0	2.00	1.00K	2K	12.0	130
73/10/17	09	30				6	12.0	440
73/11/14	09	30	19.0	5.00	2.00	2K	10.0	80
73/12/05	10	30	12.0	4.50	0.50	2	10.0	90
74/01/30	10	00	31.0	7.00	1.90	4	10.0	21
74/02/27	11	45	41.0	5.00	1.00K	2K	17.0	17
74/03/13	09	45	23.0	4.80	0.80	2	13.0	67
74/04/03	09	45	33.0	5.20	1.10	5	17.0	44
74/04/10	14	00	20.0	1.70	1.00	8	15.0	69
74/04/23	11	00	13.0	2.50	1.30	6	8.8	450
74/05/07	10	40	10.0	3.00	3.00	7	8.0	400
74/05/14	11	30	15.0	2.90	1.10	2K	9.0	317
74/05/17	14	10	17.0	1.90	1.00K	5	8.5	400
74/07/09	10	00	15.0	1.40	1.70	4	8.5	411
74/08/14	13	30	20.0	4.30	1.00K	4	9.4	23
74/09/10	11	00	20.0	2.50	1.00K	3	8.2	21
74/10/03	12	00	25.0	4.10	4.90	2K	12.0	54
74/11/05	12	00	20.0	3.40	1.50	2K	11.0	47
74/12/10	11	45	38.0	5.20	1.00K	5	14.0	92
75/01/15	09	45	20.0	2.00	1.00K	3	13.0	41
75/02/25	10	15	33.0	4.10	1.00K	2K	14.0	24
75/04/03	14	30	27.0	2.50	1.00K	2K	9.5	23
75/04/16	10	40	31.0	2.20	1.00K			150
75/05/01	09	45	19.0	1.00	0.50K	23	8.2	500
75/05/08	09	45	12.0	0.60	0.50C	20	6.6	700
75/05/15	10	00	10.0	0.90	0.50K	7	6.2	440
75/05/22	09	30	10.0	1.30	0.50K	5	5.9	133
75/05/16	10	30	20.0	2.30	0.40	2	7.4	133

STORET RETRIEVAL DATE 75/10/15

[illegible]

DATE FROM TO	TIME	DEPTH OF DAY	DEPTH FEET	00720 CYANIDE CN-TOT MG/L	00335 COD LOW LEVEL MG/L	00680 T ORG C MG/L	01002 ARSENIC AS,DIS UG/L	01007 BARIUM BA,DIS UG/L	01034 CHROMIUM CR,DIS UG/L	71900 MERCURY HG,TOTAL UG/L	01147 SELENIUM SE,DIS UG/L	00920 MAGNESIUM CACO3 MG/L
73/08/29	14	00				14.5						
73/09/13	12	30				10.8				0.1K		
73/09/26	10	30		0.005K	34.0	18.3	10K	20K	2K	0.2	2K	10.0K
73/10/17	09	35				22.2				0.2		
74/02/27	11	45		0.005K	50.0K		10K	20K	4	0.4	2K	14.0
74/03/13	09	45				7.4						
74/04/10	14	00				7.8						
74/04/23	11	00		0.005K	50.0K	12.4	10K	10K	2K	0.1	2K	4.0
74/05/07	10	40				7.0						
74/05/14	11	50				10.5						
74/05/19	14	15				12.5						
74/09/10	11	00		0.005K	50.0K		10K	15K	2K	0.2	2K	9.0
75/02/25	10	15		0.005K	23.0	8.0	10K	15K	1	0.1K	2K	13.0
75/05/01	09	45		0.005K	32.0	14.0	10K	15K	1	0.1K	2K	10.0
75/05/22	09	30										

STORET RETRIEVAL DATE 75/09/18

023 MPCA027 MAN-1
47 26 33.0 091 04 12.0
MANITOU R. NEAR LITTLE MARIS
27 MINNESOTA
LAKE SUPERIOR BASIN
LAKE SUPERIOR BASIN IN MINNESOTA
21MINN 211204
2 0999 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	03501 BETA TOTAL PC/L	03502 BETA-T ERROR PC/L	07000 H-3 TOTAL PC/L	07001 H-3,TOTL ERROR PC/L	13501 SR-90 TOTAL PC/L	13502 SR-90 ERROR PC/L	09501 RA-226 TOTAL PC/L	09502 RA-226 ERROR PC/L	39370 DDT WHL SMPL UG/L	00550 OIL-GRSE TOT-SXLT MG/L
73/09/26	10 30		2	2	770.0	260.0	0.4	0.2	11.0K		0.010K	0.5K
74/02/27	11 45		3	3	830.0	190.0	0.5	0.2	11.0K		0.050K	1.0
74/04/23	11 00		4K		350.0	170.0	0.3	0.2	11.0K		0.100K	0.5K
74/09/10	11 00		3K		410.0	170.0	0.6	0.2	3.0K			1.0
75/02/25	10 15		2K		450.0	200.0	0.4	0.3	2.0K		0.010K	1.7
75/05/01	09 45		8	3	260.0	180.0	0.5	0.2	2.0K			0.5K

STORET RETRIEVAL DATE 75/10/20

L5% --8---17567 MPCA017 NF-8
46 31 04.0 092 23 21.0
5, CORR NEMADJI-8 MI. FR. MOUTH
27 MINNESOTA
WESTERN GREAT LAKES
LAKE SUPERIOR
21MINN 2111204
2 0000 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	00010 WATER TEMP CENT	00011 WATER TEMP FAHN	31505 TOT COLI MPN CORR /100ML	31615 FEC COLI MPN,ECMED /100ML	00500 RESIDUE TOTAL MG/L	00530 RESIDUE TOT NFLT MG/L	00515 RESIDUE DISS-105 C MG/L	00070 TURB JKSN JTU	00900 TOT HARD CACO3 MG/L	00410 T ALK CACO3 MG/L
73/07/23	12	20	17.2	63.0	2400	490		10		17.0	94	96
73/08/28	11	30	19.0	66.0	170	49		32		21.0	82	77
73/09/11	13	15	16.7	62.0	490	20		28		25.0	90	92
73/09/24	12	00	7.2	45.0	330	70		27		16.0	120	96
73/10/15	12	15	9.0	48.0	1700	49		130		12.0	76	82
73/11/12	12	00	1.1	34.0	490	33		36		14.0	120	98
73/12/07	12	15	0.0	32.0	79	11		0.6		11.0	66	78
74/01/28	12	15	0.0	32.0	130	5	160	31	139	13.0	100	120
74/02/25	14	45	0.0	32.0	49	5	170	29	141	14.0	110	110
74/03/11	14	15	0.0	32.0	3500	3500	160	27	133	17.0	110	100
74/04/05	09	45	0.0	32.0	79	8	160	30	130	21.0	100	100
74/04/08	14	30	0.0	32.0	1700	95	190	33	157	17.0	98	90
74/04/22	11	30	2.8	37.0	490	13	530	510	20	170.0	51	32
74/05/06	14	30	8.3	47.0	490	33	150	42	108	23.0	60	67
74/05/13	12	20	6.6	44.0	460	20	190	190	111	79.0	66	29
74/06/17	12	00	12.2	54.0	1100	80	170	46	124	20.0	65	64
74/07/08	11	30	21.7	71.0	1400	70	140	7	133	9.9	98	90
74/08/12	11	15	16.7	62.0	1100	140	170	42	128	24.0	89	84
74/09/09	12	00	11.1	52.0	490	110	150	1	149	13.0	120	100
74/10/07	12	45	6.1	43.0	33	8	140	11	129	9.8	93	98
74/11/04	12	15	3.9	39.0	640	330	150	16	134	13.0	88	80
74/12/09	14	45	0.0	32.0	170	17	160	16	144	13.0	100	98
75/01/17	10	00	0.0	32.0	49	33	150	17	133	12.0	98	89
75/02/24	13	45	0.0	32.0	490	8	150	11	140	15.0	100	97
75/03/26	14	15	0.0	32.0	150	33	160	16	144	9.0	92	72
75/04/15	12	30	1.1	34.0	3500	110	260	140	120	9.0	81	71
75/04/29	11	45	2.8	37.0	700	49	570	560	10	180.0	75	57
75/05/05	13	30	11.1	52.0	39	5	240	110	130	94.0	83	50
75/05/13	12	45	12.8	55.0	250	33	190	56	134	80.0	78	70
75/05/20	12	00	14.4	58.0	1300	79	180	17	159	120.0	85	82
75/06/16	12	00	13.3	56.0	2200	330	285	160	125	98.0	92	96

STORET RETRIEVAL DATE 75/10/20

DATE FROM TO	TIME OF DAY	DEPTH FEET	00400 PH SU	00300 DO MG/L	00310 BOD 5 DAY MG/L	00665 PHOS-TOT MG/L P	00610 NH3-N TOTAL MG/L	00615 NO2-N TOTAL MG/L	00620 NO3-N TOTAL MG/L	00605 ORG N MG/L	00600 TOTAL P MG/L	00094 CNDUCTVY AT 25C MICROMHO
73/07/23	12	20	8.10	9.6	0.9	0.090						170
73/08/28	11	30	8.10		1.2	0.090	0.070	0.020	1.300	1.100	2.50	110
73/09/11	13	15	7.60	10.0	1.2	0.070	0.120	0.020	0.250	0.960	1.40	150
73/09/24	12	00	8.30	10.8	0.8	0.060	0.210	0.010	0.130	0.620	0.97	190
73/10/15	12	15	7.70	9.8	1.0	0.170	0.030*	0.030	0.180	1.200	1.41	120
73/11/12	12	00	8.00	13.0	2.9	0.110	0.330	0.020	0.260	0.830	1.41	160
73/12/07	12	15	7.80	13.6	0.9	0.060	0.260	0.020	0.430	0.840	1.04	150
74/01/28	12	15	7.70	13.3	0.8	0.470	0.110	0.020	0.230	0.330	0.71	210
74/02/25	14	45	6.60	13.2	1.0	0.060	0.110	0.010*	0.260	0.530	0.85	180
74/03/11	14	15	7.10	13.5	0.9	0.270	0.050*	0.010	0.430	0.380	0.99	230
74/04/05	09	45	7.60	14.4	1.5	0.080	0.050*	0.020	0.480	0.830	0.83	170
74/04/08	14	30	7.60	13.9	4.4	0.060	0.050*	0.010*	0.550	0.700	1.20	150
74/04/22	11	30	7.90	12.5	2.5	0.200	0.080	0.060	0.360	1.400	1.82	92
74/05/06	14	30	8.10	10.0	1.1	0.110	0.050*	0.030	0.130*	0.230	0.26	110
74/05/13	12	20	8.10	11.5	2.5	0.190	0.050*	0.050	0.170	1.200	1.42	98
74/06/17	12	00	8.00	9.5	0.6	0.100	0.220	0.020	0.100*	0.640	0.92	100
74/07/08	11	30	8.30	10.7	0.7	0.050	0.230	0.010*	0.220	0.830	1.30	180
74/08/12	11	15	7.00	8.4	0.5	0.170	0.100	0.030	0.100*	0.670	0.80	120
74/09/09	12	00	8.20	10.3	0.9	0.040	0.040	0.040	0.510	0.600	1.21	210
74/10/07	12	45	8.20	13.1	0.5	0.110	0.050*	0.010*	0.170	0.250	0.46	150
74/11/04	12	15	8.20	13.9	1.4	0.070	0.050*	0.040	0.150	0.640	0.87	150
74/12/09	14	45	7.70	15.1	0.5*	0.140	0.130	0.010	0.360	0.410	0.89	200
75/01/17	10	00	7.60	13.6	0.7	0.060	0.220	0.060	0.550	0.050*	0.85	180
75/02/24	13	45	7.50	13.5	0.5*	0.040	0.040	0.020	0.630	0.340	1.09	210
75/03/26	14	15	7.70	13.2	1.1	0.100	0.160	0.020	0.340	0.760	1.28	190
75/04/15	12	30	7.60	12.8	1.8	0.270	0.060	0.070	0.350	0.750	1.23	140
75/04/29	11	45	7.90	12.6	1.4	0.570	0.090	0.060	0.220	0.960	1.33	94
75/05/05	13	30	8.00	11.0	1.3	0.200	0.110	0.060	0.740	0.710	1.62	110
75/05/13	12	45	7.60	10.0	1.2	0.160	0.060	0.040	0.130	0.610	0.84	120
75/05/20	12	00	7.60	10.0	1.1	0.050	0.050*	0.020	0.130	0.670	0.82	150
75/06/16	12	00	7.60	8.8	2.1	0.280	0.240	0.050	0.140	1.200	1.63	110

STORET RETRIEVAL DATE 75/10/20

DATE FROM TO	TIME OF DAY	DEPTH FEET	00940 CHLORIDE CL MG/L	00945 SULFATE SO4-TOT MG/L	00950 FLUORIDE F,DISS MG/L	01042 COPPER CU,TOT UG/L	01027 CADMIUM CD,TOT UG/L	01067 NICKEL NI,TOTAL UG/L	01092 ZINC ZN,TOT UG/L	01051 LEAD PB,TOT UG/L	01045 IRON FE,TOT UG/L	01055 MANGNESE MN UG/L
73/07/23	12 20		4		0.20							
73/08/28	11 30		3		0.10K	10K	10K	10K	12	10K	3200	110.0
73/09/11	13 15		3		0.10K	10K	10K	10K	27	10K	1730	109.0
73/09/24	12 00		11	9	0.23	10K	10K	10K	10K	10K	3800	53.0
73/10/15	12 15		5								1700	19.0
73/11/12	12 00		3		0.12						2000	170.0
73/12/07	12 15		4	14	0.08	10K	10K	10K	10K	10K	2800	90.0
74/01/28	12 15		4	14	0.17						930	10.0K
74/02/25	14 15		3	15	0.11	10K	10K	10K	10K	10K	1400	60.0
74/03/11	14 15		3	17	0.10						1400	27.0
74/04/05	09 45		3	13	0.15						800	10.0
74/04/08	14 30		3	21	0.12	10K	10K	10K	10K	10K	1200	76.0
74/04/22	11 30		1	20	0.10K	24	10K	10K	50	50	21000	450.0
74/05/06	14 30		5	18	0.10K	10K	10K	10K	11	10K	3000	67.0
74/05/13	12 20		7	16	0.10K	10K	10K	10K	20	22	8300	91.0
74/06/17	12 00			5K	0.10K	10K	10K	10K	10	10K	3600	85.0
74/07/08	11 30		4	6	0.11	10K	10K	10K	10	10K	590	45.0
74/08/12	11 15		4	5K	0.10K	10K	10K	10K	11	10K	4100	72.0
74/09/09	12 00		12	10	0.17	10K	10K	10K	10K	10K	940	30.0
74/10/07	12 45		3	12	0.10	10K	10K	10K	10K	10K	680	73.0
74/11/04	12 15		5	10	0.12	10K	10K	15	10	10K	2500	10.0K
74/12/09	14 45		4	12	0.15	10K	10K	10K	40	10	1200	160.0
75/01/17	10 00		4	13	0.10K	10K	10K	10K	10K	10K	800	67.0
75/02/24	13 45		1	11	0.11	10K	10K	10K	11	10K	1000	64.0
75/03/26	14 15		5	16	0.11	10K	10K	10K	17	10K	1600	97.0
75/04/15	12 30		1K	14	0.10K	10	10K	45	37	10K	3300	510.0
75/04/29	11 45		7	12	0.10K	27	10K	15	84	24	11000	67.0
75/05/05	13 30		5	10	0.10K	10K	10K	10K	20	10K	4200	10.0K
75/05/13	12 45		5	10	0.10K	730	10K	16	87	10K	2500	10.0K
75/05/20	12 00		3	12	0.10K	35	10K	10K	34	10K	1500	10.0K
75/06/16	12 00		4	5K	0.13	10K	10K	10K	36	10K	3800	110.0

STORET RETRIEVAL DATE 75/10/20

ESNE--8---17167 MPCA017 NE-8
46 31 04.0 092 28 21.0
N. FORK KEMOJI-8 MI. FR. MOUTH
27 MINNESOTA
WESTERN GREAT LAKES
LAKE SUPERIOR
21MINN 2111204
2 0000 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	00910 CALCIUM CACO3 MG/L	00930 SODIUM NA,DISS MG/L	00935 POTSSIUM K,DISS MG/L	32730 PHENOLS TOTAL UG/L	00955 SILICA DISSOLVED MG/L	00061 STREAM FLOW, INST-CFS
73/07/23	12	20	62.0	7.00	1.00	17	12.0	40
73/08/28	11	30	80.0	5.00	1.00K	19	13.0	40
73/09/11	13	15	66.0	4.00	1.00	6	15.0	43
73/09/24	12	00	80.0	6.00	1.00	2K	14.0	40
73/10/15	12	15	40.0			2	13.0	40
73/11/12	12	00	46.0	8.00	1.00	2	15.0	40
73/12/07	12	15	46.0	8.00	1.10	3	16.0	47
74/01/28	12	15	72.0	17.00	6.30	5	16.0	44
74/02/25	14	45	74.0	4.50	1.00	14	19.0	7[illegible]
74/03/11	14	15	63.0	5.10	1.20	3	18.0	88
74/04/05	09	45	61.0	5.20	1.50	10	18.0	64
74/04/08	14	30	54.0	6.40	3.20	2K	14.0	64
74/04/22	11	30	39.0	1.40	1.50	4	11.0	630
74/05/06	14	30	36.0	2.70	2.00	2K	7.5	413
74/05/13	12	20	28.0	1.70	14.00	2K	18.0	340
74/05/17	12	00	47.0	2.40	5.60	2	9.0	104
74/07/08	11	30	69.0	1.40	1.00K	2	11.0	41
74/08/12	11	15	51.0	1.80	1.30	2K	12.0	104
74/09/09	12	00	92.0	4.50	1.30	2K	11.0	41
74/10/07	12	45	81.0	6.60	1.50	3	16.0	48
74/11/04	12	15	49.0	3.70	1.00	9	13.0	104
74/12/09	14	45	85.0	4.10	2.00	2K	16.0	37
75/01/17	10	00	71.0	4.30	1.80	2K	17.0	121
75/02/24	13	45	74.0	3.50	1.10	2K	16.0	127
75/03/26	14	15	82.0	4.50	1.40	6	13.0	93
75/04/15	12	30	39.0	1.00K	1.00K	4		245
75/04/29	11	45	55.0	1.40	1.80	28	7.2	1050
75/05/05	13	30	34.0	1.80	1.10	7	6.3	270
75/05/13	12	45	49.0	1.90	2.40	23	8.6	75
75/05/20	12	00	60.0	3.30	1.10	3	5.6	63
75/06/16	12	00	50.0	2.00	1.00	21	7.9	343

STORET RETRIEVAL DATE 75/10/15

LSS[illegible]---17167 MPCA017 NC-8
46 31 04.0 092 23 21.0
N. FORK N MAQUI-8 MI. FR. MOUTH
27 MINNESOTA
WESTERN GREAT LAKES
LAKE SUPERIOR
21MINN 2111204
2 0000 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	00720 CYANIDE CN-TOT MG/L	00335 COD LOWLEVEL MG/L	00660 T ORG C C MG/L	01002 ARSENIC AS,TOT UG/L	01007 BARIUM BA,TOT UG/L	01034 CHROMIUM CR,TOT UG/L	71900 MERCURY HG,TOTAL UG/L	01147 SELENIUM SE,TOT UG/L	00920 MGNSIUM CACO3 MG/L
73/09/24	12 00		0.005	27.0	18.1	10K	20K	2	0.1	5K	50.0
73/10/15	12 15				26.3						
73/11/12	12 00				5.1						
74/01/28	12 15				1.0						
74/02/25	14 45		0.005K	50.0K		10K	20K	5	0.3	2K	36.0
74/03/11	14 15				3.2						
74/04/05	09 45				5.5						
74/04/08	14 30				7.5						
74/04/22	11 30		0.050K	50.0K	15.5	10K	150	13	0.2	2K	12.0
74/05/06	14 30				10.5				0.3		
74/05/13	12 20				14.0						
74/06/17	12 00				14.8				0.4		
74/08/12	11 15					10K				2K	
74/09/09	12 00		0.005K	50.0K		10K	12K	2K	2.4	2K	28.0
75/02/24	13 45		0.005K	32.0	5.0	10K	15K	4	0.1K	2K	26.0
75/04/29	11 45		0.005K	54.0	21.0	10K		41	0.1K	2K	20.0

STORET RETRIEVAL DATE 75/10/20

LSNE--8---17E67 MPCA017 NE-8
46 31 04.0 092 23 21.0
N. FORK NEMADJI-8 MI. FR. MOUTH
27 MINNESOTA
WESTERN GREAT LAKES
LAKE SUPERIOR
21MINN 2111204
2 0000 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	03501 BETA TOTAL PC/L	03502 BETA-T ERROR PC/L	07000 H-3 TOTAL PC/L	07001 H-3,TOTL ERROR PC/L	13501 SR-90 TOTAL PC/L	13502 SR-90 ERROR PC/L	09501 RA-226 TOTAL PC/L	09502 RA-226 ERROR PC/L	39370 DDT WHL SMPL UG/L	00550 OIL-GRSE TOT-SXLT MG/L
73/09/24	12 00		3K		240.0K		0.5	0.2	7.0K		0.010K	0.5K
74/02/25	14 45		4	3							0.050K	2.9
74/04/22	11 30		6	4	510.0	170.0	0.8	0.2	11.0K		0.100K	1.6
74/09/09	12 00		3	3	800.0	180.0	0.3	0.2	4.0K			0.5K
75/02/24	13 45		3	3	250.0	200.0	0.2K		4.0K		0.040	1.7
75/04/29	11 45		27	4	210.0	200.0	0.5	0.2	15.0K		0.010K	2.5

STORET RETRIEVAL DATE 75/09/15

029 4PCAC33 PIG-3.5
49 00 03.0 089 55 12.0
PIGEON R. AT GRAND PORTAGE
27 MINNESOTA
LAKE SUPERIOR BASIN
LAKE SUPERIOR BASIN IN MINNESOTA
21MINN 2111204
2 0999 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	00010 WATER TEMP CENT	00011 WATER TEMP FAHR	31501 TOT COLI MPN CONF /100ML	31615 FEC COLI MPNECMED /100ML	00500 RESIDUE TOTAL MG/L	00530 RESIDUE TOT VFLT MG/L	00515 RESIDUE DISS-105 C MG/L	00070 TURB JKSN JTU	00900 TOT HARD CACO3 MG/L	00410 T ALK CACO3 MG/L
73/07/25	15 30		23.0	73.0	490	80		5		7.9	31	33
73/08/30	10 00		21.7	71.0	220	13		3		3.3	48	34
73/09/13	17 30		15.7	60.0	230	17		5		3.7	36	31
73/09/27	10 15		10.0	50.0	1700	20K		1		13.0	40	18
73/10/15	09 45		6.0	42.8	170	13		4		4.3	22	26
73/11/15	10 00		0.0	32.0	140	4		0.5K		2.5	32	32
73/12/05	15 45		0.0	32.0	170	2		2		4.0	21	50
74/01/31	11 30		0.0	32.0	110	9	77	4	73	2.5	25	52
74/02/25	10 00		0.0	32.0	49	11	64	0.4	64	3.7	33	47
74/03/13	14 15		0.0	32.0	49	5	66	3	63	0.2	35	36
74/04/03	14 30		0.0	32.0	110	7	62	0.4	62	4.8	40	41
74/04/10	09 45		0.0	32.0	220	11	71	0.4	71	3.5	37	30
74/04/23	15 30		0.6	33.0	1300	27	140	59	71	30.0	21	10
74/05/07	14 45		5.5	42.0	230	11	67	10	57	10.0	24	11
74/05/14	16 00		4.4	40.0	230	33	89	15	74	14.0	21	14
74/05/13	10 00		15.0	59.0	150	9	50	3	57	5.5	14	19
74/07/02	17 00		25.6	78.0	110	14	260	8	252	5.0	28	34
74/08/14	08 30		16.1	61.0	230	33	67	4	63	3.0	33	29
74/09/11	09 45		12.8	55.0	2400	1300	250	190	60	76.0	34	25
74/10/09	09 30		5.6	42.0	140	22	92	13	79	7.0	37	34
74/11/06	08 00		1.7	35.0	130	13	78	8	70	5.0	34	23
74/12/10	14 15		0.0	32.0	70	5	66	4	62	4.0	32	25
75/01/15	16 00		0.0	32.0	320	20K	86	8	73	9.6	35	25
75/02/25	15 15		0.0	32.0	84	2	68	0.5K	68	4.2	40	34
75/04/03	09 45		0.0	32.0	79	5	56	3	53	4.3	48	38
75/04/16	14 30		0.0	32.0	580	2K	100	20	80	31.0	51	42
75/04/30	15 00		3.3	38.0	59	5	85	1	67	13.0	28	24
75/05/07	15 00		7.2	45.0	33	2	74	12	62	13.0	27	22
75/05/14	14 00		12.8	55.0	170	8	58	12	46	5.9	28	17
75/05/21	14 00		17.8	64.0	130	22	65	10	55	7.6	29	23
75/05/17	15 00		18.3	65.0	33	5	58	1	57	3.2	36	33

STORET RETRIEVAL DATE 75/09/18

029 MPCA033 PIG-3.5
48 00 03.0 089 55 12.0
PIGEON R. AT GRAND PORTAGE
27 MINNESOTA
LAKE SUPERIOR BASIN
LAKE SUPERIOR BASIN IN MINNESOTA
21MINN 2111204
2 0999 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	00400 PH SU	00300 DO MG/L	00310 BOD 5 DAY MG/L	00665 PHOS-TOT MG/L P	00610 NH3-N TOTAL MG/L	00615 NO2-N TOTAL MG/L	00620 NO3-N TOTAL MG/L	00605 ORG N TOTAL MG/L	00600 TOTAL N N MG/L	00095 CNDUCTVY AT 25C MICROMHO
73/07/25	16 30		7.50	8.2	1.1	0.090						65
73/08/30	13 00		7.90	8.7	0.7	0.050	0.140	0.010	0.100K	0.670	0.82	77
73/09/18	17 30		7.40	10.1	0.9	0.030	0.050K	0.010K	0.100K	0.530	0.53	58
73/10/27	10 15		7.80	10.2	1.1	0.060	0.130	0.020	0.100	0.940	1.10	87
73/10/18	07 45		7.80	11.7	2.3	0.190	0.050K	0.010	0.100K	0.940	0.97	110
73/11/15	10 00		7.00	13.9	1.2	0.040	0.250	0.010K	0.100K	0.700	0.95	74
73/12/05	15 45		7.40	13.2	0.8	0.040	0.040	0.010K	0.170	0.600	0.81	64
74/01/31	11 30		7.50	15.3	0.8	0.090	0.140	0.010K	0.120	0.510	0.77	87
74/02/25	10 00		7.20	13.8	1.6	0.050	0.270	0.010K	0.100K	0.970	1.24	98
74/03/15	14 15		6.70	14.5	0.7	0.070	0.050K	0.010K	0.390	0.410	0.80	92
74/03/03	14 30		7.40	14.8	2.2	0.020	0.140	0.010K	0.180	0.360	0.68	44
74/04/10	09 45		7.40	13.3	0.5K	0.020	0.050K	0.010	0.170	0.330	0.51	91
74/04/23	15 30		7.20	14.0	3.7	0.180	0.050K	0.030	0.360	0.910	1.30	50
74/05/07	14 45		7.30	12.8	0.5	0.060	0.050K	0.010K	0.260	0.670	1.03	52
74/05/14	15 00		7.20	12.7	3.0	0.070	0.050K	0.020	0.180	0.710	0.91	46
74/06/13	10 00		7.40	9.5	0.8	0.030	0.430	0.010	0.100K	0.730	1.22	60
74/07/09	17 00		7.60	8.1	0.5K	0.040	0.230	0.010	0.140	0.600	0.98	62
74/08/14	08 30		7.80	8.9	3.5	0.030	0.050K	0.060	0.280	0.210	0.55	68
74/09/11	09 45		7.50	9.7	2.0	0.320	0.160	0.030	0.170	1.300	1.66	81
74/10/07	09 30		6.70	12.7	1.1	0.030	0.050K	0.020	0.100K	0.460	0.62	83
74/11/06	08 00		6.80	13.3	0.5	0.030	0.050K	0.020	0.260	0.450	0.93	71
74/12/10	16 15		7.20	14.0	0.8	0.130	0.050K	0.030	0.100	0.470	0.65	70
75/01/15	16 00		7.30	14.1	0.6	0.040	0.050K	0.030	0.430	0.360	0.82	74
75/02/25	15 15		7.40	13.9	0.7	0.030	0.050K	0.020	0.230	0.500	0.75	77
75/04/03	09 45		7.20	14.6	1.1	0.040	0.260	0.020	0.130	0.350	0.77	82
75/04/15	14 30		7.50	11.7	1.1	0.090	0.080	0.030	0.420	0.480	1.04	87
75/04/30	15 00		7.00	13.3	1.3	0.050	0.050K	0.030	0.200	0.450	0.68	44
75/05/07	15 00		7.30	11.9	0.5	0.050	0.050K	0.030	0.130	0.450	0.61	46
75/05/14	14 00		7.70	10.5	1.0	0.030	0.050K	0.030	0.140	0.540	0.71	40
75/05/21	14 00		7.20	9.2	1.2	0.030	0.050K	0.010	0.100K	0.480	0.49	56
75/06/17	15 00		7.50	9.2	0.9	0.070	0.050K	0.010	0.100K	1.500	1.51	67

STORET RETRIEVAL DATE 75/09/18

029 MPCA033 PI3-3.5
48 00 03.0 089 55 12.0
PIGEON R. AT GRAND PORTAGE
27 MINNESOTA
LAKE SUPERIOR BASIN
LAKE SUPERIOR BASIN IN MINNESOTA
21MINN 2111204
2 0999 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	00940 CHLORIDE CL MG/L	00945 SULFATE SO4-TOT MG/L	00950 FLUORIDE F,DISS MG/L	01042 COPPER CU,TOT UG/L	01027 CADMIUM CD,TOT UG/L	01067 NICKEL NI,TOTAL UG/L	01092 ZINC ZN,TOT UG/L	01051 LEAD PB,TOT UG/L	01045 IRON FE,TOT UG/L	01055 MANGNESE MN UG/L
73/07/25	15 30		2		0.10K						850	51.0
73/08/10	10 00		2		0.61	10K	10K	10K	10K	10K	818	112.0
73/09/13	17 30		3		0.10K	10K	10K	10K	54	10K	580	10.0K
73/09/27	10 15		8	32	0.11	10K	10K	10K	25	10K	1000	99.0
73/10/18	09 45		2		0.07	13	10K	10K	10K	10K	10K	10.0K
73/11/15	10 00		2		0.11						510	20.0
73/12/05	15 45		2		0.07	10K	10K	10K	10K	10K	600	43.0
74/01/31	11 30		1K	11	0.10K						590	20.0
74/02/25	10 00		3	11	0.14	10K	10K	10K	10K	10K	460	19.0
74/03/15	14 15		2	11	0.10						270	10.0
74/04/03	14 30		2	10	0.10K	10K	10K	10K	10K	10K	350	10.0K
74/04/10	09 45		2	12	0.16	10K	10K	10K	13	10K	380	5.0
74/04/23	15 30		2	10	0.10K	13	10K	10K	15	10K	6800	120.0
74/05/07	14 45		4	12	0.10K	10K	10K	10K	10K	10K	1000	20.0
74/05/14	16 00		1	14	0.10K	10K	10K	10K	14	10K	2600	11.0
74/05/29	10 00		1	8	0.10K	10K	10K	10K	10K	10	630	37.0
74/07/09	17 00		1K	9	0.10K	10K	10K	10K	18	10K	350	35.0
74/08/14	08 30		3	5K	0.13	10K	10K	13	11	10K	570	10.0K
74/09/11	09 45		6	10	0.14	11	10K	11	34	44	14000	120.0
74/10/09	07 30		6	9	0.10K	10K	10K	10K	10K	10K	830	27.0
74/11/06	06 00		3	8	0.10K	10K	10K	10K	10K	43	1300	33.0
74/12/10	15 15		2	9	0.10K	10K	10K	10K	10K	10K	610	15.0
75/01/15	16 00		3	12	0.10	10K	10K	10K	39	10K	980	10.0K
75/02/25	15 15		3	9	0.13	10K	10K	10K	15	10K	370	10.0K
75/04/03	09 45		2	9	0.12	10K	10K	10K	14	10K	240	10.0K
75/04/16	14 30		4	8	0.12	10K	10K	10K	15	10K	2600	82.0
75/04/30	15 00		2	8	0.10K	10	10K	10K	25	10K	1600	85.0
75/05/07	15 00		2	5K	0.12	10K	10K	10K	320	10K	490	10.0K
75/05/14	14 00		3	8	0.06	13	10K	10K	47	10K	1200	10.0K
75/05/21	14 00		2	9	0.10K	10K	10K	10K	160	10K	24	1700.0
75/06/17	15 00		1	5K	0.15	10K	10K	10K	10K	10K	370	18.0

STORET RETRIEVAL DATE 75/09/18

029 MPCA033 PIG-3.5
48 00 03.0 089 55 12.0
PIGEON R. AT GRAND PORTAGE
27 MINNESOTA
LAKE SUPERIOR BASIN
LAKE SUPERIOR BASIN IN MINNESOTA
21MINN 2111204
2 0499 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	00915 CALCIUM CACO3 MG/L	00930 SODIUM NA,DISS MG/L	00935 POTSSIUM K,DISS MG/L	32730 PHENOLS TOTAL UG/L	00955 SILICA DISOLVED MG/L	00061 STREAM FLOW, INST-CFS
73/07/25	16 30		24.0	3.00	1.00K	5K	6.6	382
73/08/30	13 00		28.0	3.00	1.00K	10	8.0	605
73/09/13	17 30		26.0	2.00	1.00K	2	8.3	612
73/04/27	10 15		28.0	2.00	1.00	2K	9.C	949
73/10/15	07 45		17.0	3.00	2.00	2K	9.0	823
73/11/19	13 30		22.0	3.00	1.00K	2K	7.8	453
73/12/05	15 45		13.0	4.40	0.74	2K	8.7	510
74/01/31	11 30		27.0	4.50	2.30	2K	9.2	225
74/02/21	10 00		23.0	11.00	3.00	2K	7.6	195
74/03/13	14 15		25.0	4.40	0.70	2K	9.2	167
74/04/03	14 30		32.0	4.90	1.20	2K	9.0	135
74/04/10	07 45		24.0	3.00	0.90	6	7.5	175
74/04/23	15 30		15.0	2.00	1.30	2K	7.9	2140
74/05/07	14 45		17.0	2.00	3.00	2K	7.1	1830
74/05/14	16 00		13.0	1.90	1.00K	2K	7.6	3050
74/06/19	13 00		8.1	1.80	1.00K	3	5.6	1020
74/07/09	17 00		13.0	3.20	1.10	2	5.3	462
74/08/14	08 30		20.0	2.10	1.00K	35	5.7	132
74/09/11	07 45		20.0	2.00	1.40	4	5.1	1390
74/10/07	08 30		22.0	3.10	1.50	2K	7.3	435
74/11/06	09 00		16.0	1.00	1.00K	7	8.4	627
74/12/10	15 15		27.0	2.50	1.60	11	8.3	400
75/01/15	16 00		15.0	1.70	1.00K	2K	9.3	345
75/02/25	15 15		25.0	2.60	1.00K	2K	8.2	220
75/04/03	07 45		33.0	2.60	0.40	2K		250
75/04/16	14 30		28.0	2.10	1.30K	2K		1500
75/04/30	15 00		19.0	1.00	0.60	4	7.3	2910
75/05/07	15 00		19.0	1.00K	1.00	3	8.0	2940
75/05/14	14 00		22.0	1.00	0.50K	2K	4.9	1810
75/05/21	14 00		21.0	1.40	0.60	3	4.3	1230
75/06/17	15 00		20.0	1.50	0.56K	2	5.0	455

STORET RETRIEVAL DATE 75/10/15

029 MPCA033 PIG-3.5
48 00 03.0 089 55 12.0
PIGEON R. AT GRAND PORTAGE
27 MINNESOTA
LAKE SUPERIOR BASIN
LAKE SUPERIOR BASIN IN MINNESOTA
21MINN 2111204
2 0999 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	00720 CYANIDE CN-TOT MG/L	00335 COD LOW LEVEL MG/L	T 00680 ORG C C MG/L	01002 ARSENIC AS,TOT UG/L	01007 BARIUM BA,TOT UG/L	01034 CHROMIUM CR,TOT UG/L	71900 MERCURY HG,TOTAL UG/L	01147 SELENIUM SE,TOT UG/L	00920 MGNSIUM CACO3 MG/L
73/08/30	10 00				28.6				0.1K		
73/09/13	17 30								0.1		
73/09/27	10 15		0.005	32.0		10K	20K	2K	0.4	2K	12.0
73/10/18	09 45								0.8		
74/02/28	10 00		0.005K	50.0K		10K	20K	3	0.8	2K	10.0
74/04/10	09 45				7.5						
74/04/23	15 30		0.005K	50.0K	15.0	10K	10K	2K	0.1	2K	6.0
74/05/07	14 45				7.0						
74/05/14	16 00				11.0						
74/06/19	10 00				6.0						
74/09/11	09 45		0.005K	61.0		10K	15K	46	0.1	2K	14.0
75/02/25	15 15		0.005K	21.0	5.8	10K	15K	2	0.1K	2K	15.0
75/04/30	15 00		0.005K	33.0	15.0	10K	15K	3	0.1	2K	9.0

STORET RETRIEVAL DATE 75/09/18

029 MPCA033 PIG-3.5
48 00 03.0 089 55 12.0
PIGEON R. AT GRAND PORTAGE
27 MINNESOTA
LAKE SUPERIOR BASIN
LAKE SUPERIOR BASIN IN MINNESOTA
21MINN 2111204
2 0999 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	03501 BETA TOTAL PC/L	03502 BETA-T ERROR PC/L	07000 H-3 TOTAL PC/L	07001 H-3,TOTL ERROR PC/L	13501 SR-90 TOTAL PC/L	13502 SR-90 ERROR PC/L	09501 RA-226 TOTAL PC/L	09502 RA-226 ERROR PC/L	39370 DDT WHL SMPL UG/L	00550 OIL-GRSE TOT-SXLT MG/L
73/09/27	10 15		4	2	290.0	130.0	0.9	0.2	6.2K		0.010K	0.5K
74/02/28	10 00		3	2	870.0	190.0	0.8	0.2	11.0K		0.010K	
74/04/23	15 30		8	4	360.0	190.0	0.9	0.2	11.0K		0.010K	1.0
74/09/11	09 45		5	3	290.0	170.0	0.8	0.2	2.0K			0.5K
75/02/25	15 15		4	3	360.0	200.0	0.9	0.2	2.0K		0.010K	0.7
75/04/30	15 00		8	3	180.0K		0.4	0.2	2.0K		0.010K	0.9

STORET RETRIEVAL DATE 75/09/18

026 MPCA030 POP-0
47 38 07.0 090 42 24.0
POPLAR RIVER NEAR LUTSEN
27 MINNESOTA
LAKE SUPERIOR BASIN
LAKE SUPERIOR BASIN IN MINNESOTA
21MINN 2111204
2 0999 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	00010 WATER TEMP CENT	00011 WATER TEMP FAHN	31505 TOT COLI MPN CONF /100ML	31615 FEC COLI MPNFCMED /100ML	00500 RESIDUE TOTAL MG/L	00550 RESIDUE TOT NFLT MG/L	00515 RESIDUE DISS-105 C MG/L	00070 TURB JKSN JTU	00900 TOT HARD CACO3 MG/L	00410 T ALK CACO3 MG/L
73/07/25	13 00		18.9	66.0	110	30		4		2.8	29	28
73/08/29	16 30		23.9	75.0	330	49		1		1.5		29
73/09/18	15 30		16.7	62.0	490	17		3		2.6		29
73/09/25	14 15		11.1	52.0	700	130		27		14.0	48	26
73/10/17	12 00		5.0	41.0	170	2		2		1.3		24
73/11/14	12 00		2.2	36.0	180	2K		0.5K		1.8	20	22
73/12/21	12 00		0.0	32.0	230	20K	70	3	67	0.3	29	15
74/01/30	14 30		0.0	32.0	21	2	74	10	64	2.7	29	38
74/02/23	13 45		0.0	32.0	230	8	59	1	58	1.5	32	44
74/03/14	10 00		0.0	32.0	23	2	63	6	62	1.7	28	30
74/04/03	12 00		0.0	32.0	79	5	63	0.4	63	2.0	31	35
74/04/10	11 40		0.0	32.0	79	23	66	0.4	66	2.0	27	22
74/04/23	12 15		0.6	33.0	170	11	68	10	58	5.0	19	10
74/05/08	10 00		4.4	40.0	22	2K	45	4	41	2.0	17	13
74/05/14	15 00		8.1	46.0	110	2	77	14	58	11.0	15	10
74/06/19	12 30		14.4	58.0	330	11	51	2	49	2.1	13	12
74/07/10	09 45		21.7	71.0	80	17	64	3	61	2.1	25	20
74/08/14	11 30		17.2	63.0	79	33	72	0.4	72	1.0	25	27
74/09/10	15 00		11.7	53.0	220	22	60	2	58	2.3	36	20
74/10/08	14 45		6.1	43.0	220	5	71	10	61	5.5	25	26
74/11/06	11 00		2.2	36.0	70	7	68	5	63	1.2	22	23
74/12/11	10 30		0.0	32.0	46	2K	70	5	62	1.3	31	28
75/01/15	15 00		0.0	32.0	79	20K	67	0.5K	67	3.8	25	22
75/02/25	12 05		0.6	33.0	49	13	62	2	60	2.0	36	30
75/04/03	13 15		0.6	33.0	33	2K	54	0.5K	54	3.8	34	29
75/04/16	11 45		1.1	34.0	330	4	75	7	68	9.5	56	43
75/04/30	11 45		1.7	35.0	110	5	88	21	67	7.7	28	23
75/05/07	12 00		5.6	42.0	330	2	52	10	42	5.2	22	14
75/05/14	11 30		11.1	52.0	120	13	52	6	46	3.2	26	18
75/05/21	11 00		15.5	60.0	49	17	52	0.5K	52	1.8	22	19
75/06/17	12 30		16.7	62.0	460	33	51	1	50	1.5	28	22

STORET RETRIEVAL DATE 75/09/18

026 MPCA030 POP-0
47 38 07.0 090 42 24.0
POPLAR RIVER NEAR LUTSEN
27 MINNESOTA
LAKE SUPERIOR BASIN
LAKE SUPERIOR BASIN IN MINNESOTA
21MINN 2111204
2 0999 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	00400 PH SU	00300 DO MG/L	00310 BOD 5 DAY MG/L	00665 PHOS-TOT MG/L P	00610 NH3-N TOTAL MG/L	00615 NO2-N TOTAL MG/L	00620 NO3-N TOTAL MG/L	00605 ORG N MG/L	00600 TOTAL N MG/L	00095 CNDUCTVY AT 25C MICROMHO
73/07/25	13 00		7.60	9.0	0.6	0.080						61
73/08/29	10 30		7.80	7.9	0.8	0.070	1.500	0.010	0.100K	0.510	2.00	62
73/07/13	15 30		7.70	10.7	0.5	0.020	0.050K	0.010	0.110	0.470	0.59	55
73/08/26	14 15		7.40	10.4	0.5	0.050	0.150	0.010	0.400	0.810	1.36	58
73/10/17	12 30		7.20	12.7	1.3	0.020	0.050K	0.010	0.160	0.760	0.95	59
73/11/14	12 30		7.70	13.6	1.5	0.090	0.250	0.010	0.270	0.730	1.20	60
73/12/21	12 00		7.60	14.2	0.9	0.020	0.170	0.010	0.220	0.720	0.95	61
74/01/30	14 00		7.40	13.4	1.5	0.070	0.210	0.010	0.220	0.600	1.04	76
74/02/23	13 45		7.40	14.5	0.9	0.060	0.130	0.010K	0.230	0.590	0.95	79
74/03/14	13 00		6.90	14.3	0.6	0.010K	0.050	0.010	0.600	0.420	1.08	79
74/04/03	12 00		7.50	14.8	2.2	0.030	0.140	0.010K	0.500	0.400	1.04	67
74/04/10	11 40		7.70	13.0	0.5K	0.020	0.050K	0.010	0.310	0.390	0.71	71
74/04/25	12 15		7.20	14.4	2.5	0.050	0.050K	0.030	0.780	0.780	1.59	45
74/05/08	13 30		7.60	12.3	7.7	0.010K	0.100	0.010	0.300	0.680	1.09	41
74/05/14	13 00		6.80	12.3	2.9	0.060	0.050K	0.020	0.450	0.690	1.15	39
74/06/19	12 30		7.40	9.6	0.9	0.030	0.270	0.010K	0.100K	0.590	0.87	45
74/07/10	09 45		7.20	8.5	1.6	0.130	0.150	0.020	0.170	0.300	0.65	56
74/08/14	11 30		7.70	7.4	3.4	0.040	0.050K	0.050	0.100	0.330	0.45	64
74/09/10	15 00		7.60	10.4	0.7	0.020	0.180	0.010	0.100K	0.490	0.68	50
74/10/03	14 45		8.10	12.1	0.9	0.020	0.050K	0.010	0.330	0.370	0.71	67
74/11/06	11 30		6.70	13.2	0.5K	0.010	0.050K	0.020	0.210	0.200	0.43	64
74/12/11	13 30		7.40	14.7	1.6	0.330	0.080	0.040	0.270	0.580	1.07	81
75/01/15	13 30		7.30	14.5	0.5K	0.030	0.070	0.030	0.540	0.390	1.03	62
75/02/25	12 05		7.40	13.8	0.5	0.020	0.070	0.010	0.450	0.500	1.00	68
75/04/03	13 15		7.40	13.5	0.5	0.030	0.320	0.020	0.340	0.500	1.18	68
75/04/15	11 45		7.60	12.9	1.2	0.030	0.170	0.040	0.750	0.510	1.51	71
75/04/30	11 45		6.90	14.3	1.1	0.040	0.050	0.030	0.800	0.550	1.43	44
75/05/07	12 00		7.50	12.8	0.5K	0.030	0.050K	0.040	0.430	0.510	0.98	40
75/05/14	11 30		7.90	12.0	1.0	0.030	0.050K	0.040	0.340	0.550	0.93	43
75/05/21	11 00		7.30	10.0	0.9	0.010	0.050K	0.010	0.100K	0.470	0.48	47
75/06/17	12 30		7.60	9.9	1.3	0.020	0.050K	0.020	0.100K	0.620	0.64	50

STORET RETRIEVAL DATE 75/09/18

026 MPCA030 POP-0
47 38 07.0 090 42 24.0
POPLAR RIVER NEAR LUTSEN
27 MINNESOTA
LAKE SUPERIOR BASIN
LAKE SUPERIOR BASIN IN MINNESOTA
21MINN 2111204
2 0999 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	00940 CHLORIDE CL MG/L	00945 SULFATE SO4-TOT MG/L	00950 FLUORIDE F,DISS MG/L	01042 COPPER CU,TOT UG/L	01027 CADMIUM CD,TOT UG/L	01067 NICKEL NI,TOTAL UG/L	01092 ZINC ZN,TOT UG/L	01051 LEAD PB,TOT UG/L	01045 IRON FE,TOT UG/L	01055 MANGNESE MN UG/L
73/07/25	13 30		3		0.20							
73/08/29	15 30		3								520	15.0
73/09/19	15 30		2			10K	10K	10K	10K	10K	440	80.0
73/04/26	14 15		5	14	0.34	10K	10K	10K	10K	10K	520	10.0K
73/10/17	12 00		3		0.23	10K	10K	10K	10K	10K	960	80.0
73/11/14	12 00		2								500	5.0K
73/12/21	12 00		3	11	0.17						360	5.0
74/01/30	14 00		1K	12	0.18	10K	10K	10K	10K	10K	170	10.0K
74/02/26	13 45		4	12	0.18						620	10.0
74/03/14	13 00		2	10	0.25	10K	10K	10K	10K	10K	300	10.0K
74/04/03	12 00		2	10	0.20	10K	10K	10K	10K	130	370	10.0K
74/04/10	11 40		2	13	0.21	10K	10K	10K	10K	10K	300	10.0K
74/04/23	12 15		3	8	0.30	10K	10K	10K	13	10K	320	5.0K
74/05/08	13 00		5	11	0.11	10K	10K	10K	10K	10K	1000	32.0
74/05/14	13 00		5	14	0.14	10K	10K	10K	10K	10K	340	21.0
74/06/19	12 30		5	8	0.13	10K	10K	10K	14	10K	1600	10.0K
74/07/10	13 45		6	8	0.14	10K	10K	10K	14	10K	250	32.0
74/08/14	11 30		4	5K	0.18	13	10K	10K	15	10K	440	18.0
74/09/10	15 00		9	12	0.16	10K	10K	10K	10K	10K	430	24.0
74/10/08	14 45		2	5K	0.22	10K	10K	10K	10K	10K	560	20.0
74/11/05	11 00		2	5K	0.19	10	10K	10K	10K	10K	550	10.0K
74/12/11	13 30		3	9	0.14	10K	10K	10K	10K	10K	400	17.0
75/01/15	13 00		4	5K	0.22	10K	10K	10K	10K	10K	240	10.0K
75/02/25	12 05		4	9	0.14	10K	10K	10K	32	10K	250	10.0K
75/04/03	13 15		2	5	0.21	10K	10K	10K	15	10K	240	12.0
75/04/16	11 45		5	7	0.23	10K	10K	10K	15	10K	250	10.0K
75/04/30	11 45		2	8	0.13	10K	10K	10K	10K	10K	800	74.0
75/05/07	12 00		1	8	0.11	10K	10K	10K	29	10K	1000	94.0
75/05/14	11 30		4	8	0.23	10K	10K	10K	44	10K	150	45.0
75/05/21	11 00		2	5	0.12	10K	10K	10K	38	10K	360	10.0K
75/05/17	12 30		1	9	0.12	10K	10K	10K	210	10K	250	10.0K
					0.25	10K	10K	10K	10K	10K	310	16.0

STORET RETRIEVAL DATE 75/09/18

026 MPCA030 POP-3
47 38 07.0 090 42 24.0
POPLAR RIVER NEAR LUTSEN
27 MINNESOTA
LAKE SUPERIOR BASIN
LAKE SUPERIOR BASIN IN MINNESOTA
21MINN 2111204
2 0999 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	00910 CALCIUM CA,DISS MG/L	00930 SODIUM NA,DISS MG/L	00935 PTSSIUM K,DISS MG/L	32730 PHENOLS TOTAL UG/L	00955 SILICA DISOLVED MG/L	00061 STREAM FLOW, INST-CFS
73/07/25	13 30		21.0		1.00	5K	8.1	46
73/08/29	15 30		35.0	3.00	1.00K	4	9.7	40
73/09/13	15 30		38.0	2.00	1.00K	2K	10.0	61
73/09/26	14 15		24.0	3.00	1.00K	2K	12.0	134
73/10/17	12 00					2K	11.0	230
73/11/14	12 00		14.0	5.00	3.00	4	11.0	207
73/12/21	12 00		22.0	4.50	1.10	2K	13.0	127
74/01/30	14 00		22.0	5.30	1.50	3	14.0	17
74/02/28	13 45		22.0	13.00	3.40	7	13.0	39
74/03/14	10 00		21.0	6.00	2.90	3	25.0	50
74/04/03	12 00		20.0	5.20	1.10	5	15.0	41
74/04/10	11 40		21.0	3.70	0.60	2	15.0	49
74/04/23	12 15		11.0	3.30	1.50	2K	8.6	1275
74/05/08	10 00		16.0	1.00	1.10	2K	5.6	538
74/05/14	13 30		15.0	2.30	1.20	3	8.4	719
74/06/19	12 30		14.0	2.10	6.20	2	8.3	195
74/07/10	09 45		20.0	1.20	4.50	7	7.8	132
74/08/14	11 30		19.0	3.70	1.60	4	7.1	72
74/09/10	15 00		26.0	3.20	1.00K	2	6.9	67
74/10/08	14 45		22.0	4.70	1.00K	5	9.7	74
74/11/06	11 00		30.0	3.00	1.00K	2	10.0	64
74/12/11	10 30		26.0	3.40	1.80	2K	10.0	50
75/01/15	13 00		14.0	3.20	1.00K	3	11.0	57
75/02/25	12 05		29.0	4.10	1.00K	2K	12.0	29
75/03/03	15 15		17.0	2.30	0.50K	2K	15.6	40
75/04/15	11 45		39.0	2.50	1.00K	6		255
75/04/30	11 45		19.0	1.30	0.50K	7	8.1	446
75/05/07	12 00		12.0	1.10	1.00K	2K	7.2	482
75/05/14	11 30		12.0	1.10	0.50K	2K	0.6	300
75/05/21	11 00		16.0	1.60	0.50	3	6.2	200
75/05/17	12 30		16.0	1.70	0.50K	2K	6.7	50

STORET RETRIEVAL DATE 75/10/15

026 MPCA030 POP-0
47 38 07.0 090 42 24.0
POPLAR RIVER NEAR LUTSEN
27 MINNESOTA
LAKE SUPERIOR BASIN
LAKE SUPERIOR BASIN IN MINNESOTA
21MINN 2111204
2 0999 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	00720 CYANIDE CN-TOT MG/L	00335 COD LOWLEVEL MG/L	00680 T ORG C C MG/L	01002 ARSENIC AS,TOT UG/L	01007 BARIUM BA,TOT UG/L	01034 CHROMIUM CR,TOT UG/L	71900 MERCURY HG,TOTAL UG/L	01147 SELENIUM SE,TOT UG/L	00920 MGNSIUM CACO3 MG/L
73/08/29	16 30				6.9						
73/09/13	15 30				14.4				0.1K		
73/09/26	14 15		0.005K	61.0	22.6	10K	20K	2K	1.0	2K	24.0
73/10/17	12 00				22.4				0.3		
74/02/28	13 45		0.005K	50.0K	9.1	10K	20K	3	0.3	2K	10.0
74/03/14	10 00				7.8						
74/04/10	11 40				7.0						
74/04/23	12 15		0.005K	52.0	11.0	10K	10K	2K	0.3	2K	8.0
74/05/08	10 00				9.0						
74/05/14	13 00				10.5						
74/06/19	12 30				11.0						
74/09/10	15 00		0.043	26.0		10K	15K	2K	0.3	2K	10.0
75/02/25	12 05		0.005R	22.0	7.8	10K	15K	2	0.1K	2K	7.0
75/04/30	11 45		0.005K	32.0	13.0	10K	15K	6	0.1K	2K	9.0

STORET RETRIEVAL DATE 75/09/18

026 MPCA030 POP-0
47 38 07.0 090 42 24.0
POPLAR RIVER NEAR LUTSEN
27 MINNESOTA
LAKE SUPERIOR BASIN
LAKE SUPERIOR BASIN IN MINNESOTA
21MINN 2111204
2 0999 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	03501 BETA TOTAL PC/L	03502 BETA-T ERROR PC/L	07000 H-3 TOTAL PC/L	07001 H-3,TOTL ERROR PC/L	13501 SR-90 TOTAL PC/L	13502 SR-90 ERROR PC/L	09501 RA-226 TOTAL PC/L	09502 RA-226 ERROR PC/L	39370 DDT WHL SMPL UG/L	00550 OIL-GRSE TOT-SXLT MG/L
73/09/26	14 15		4	3	640.0	250.0	0.4	0.2	9.6K		0.010K	0.5K
74/02/28	13 45		3	2	570.0	230.0	1.0	0.3	12.0K		0.050K	1.3
74/04/23	12 15		4K		530.0	170.0	0.2	0.2	11.0K		0.100K	3.0
74/09/10	15 00		4	3	260.0	170.0	0.7	0.2	2.0K			0.5K
75/02/25	12 05		4	3	570.0	210.0	0.6	0.2	2.0K		0.010K	0.5K
75/04/30	11 45		6	3	250.0	180.0	0.7	0.2	1.0K		0.010K	2.7

STORET RETRIEVAL DATE 75/09/18

020 MPCA024 SPL-0.1
47 10 52.0 091 24 21.0
SPLIT ROCK R. NEAR CASTLE DANGER
27 MINNESOTA
ARE SUPERIOR BASIN
LAKE SUPERIOR BASIN IN MINNESOTA
21MNN 2111204
2 0999 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	00010 WATER TEMP CENT	00011 WATER TEMP FAHN	31505 TOT COLI MPN CONF /100ML	31515 FEC COLI MPNEGMED /100ML	00500 RESIDUE TOTAL MG/L	00530 RESIDUE TOT NFLT MG/L	00515 RESIDUE DISS-105 C MG/L	00070 TURB JKSN JTU	00900 TOT HARD CACO3 MG/L	00410 T ALK CACO3 MG/L
73/07/26	13 30		19.4	67.0	490	20		0.5<		2.6	48	120
73/08/29	11 40		21.7	71.0	170	49		1		2.3		64
73/09/12	13 50		17.2	63.0	280	13		1		2.9	65	56
73/09/25	13 30		13.9	57.0	130	130		2		3.7	62	50
73/10/15	14 20		8.0	46.0	330	7		4		6.3		34
73/11/13	14 30		0.0	33.0	460	13		4		4.5		46
73/12/04	14 00		0.0	32.0	170	8		7		5.4	38	50
74/01/29	15 00		0.6	33.0	26	5	120	3	117	2.2	72	81
74/02/26	14 45		0.0	32.0	33	33	110	0.4	110	2.0	92	72
74/03/12	14 45		0.0	32.0	79	2K	100	4	96	4.2	69	73
74/04/04	11 15		0.0	32.0	17	2	100	0.4	100	2.9	71	78
74/04/09	12 00		0.0	32.0	21	2K	100	4	96	7.5	62	60
74/04/24	11 30		1.1	34.0	1100	9	81	23	53	22.0	18	10K
74/05/08	12 00		5.0	41.0	27	13	74	8	66	10.0	38	23
74/05/15	13 30		6.1	43.0	330	34	79	17	62	12.0	20	10K
74/06/18	12 15		11.1	52.0	790	49	93	1	92	4.8	35	34
74/07/10	13 15		22.2	72.0	1100	79	69	5	4	1.7	62	97
74/08/13	11 45		17.8	64.0	1300	33	110	2	108	3.7	62	53
74/09/12	11 15		11.1	52.0	52	32	100	9	91	1.7	67	66
74/10/09	15 30		7.8	46.0	110	8	120	2	118	2.6	56	55
74/11/05	10 00		2.8	37.0	430	8	110	3	107	11.0	42	40
74/12/11	13 00		0.0	32.0	330	9	130	7	123	2.7	95	86
75/01/16	12 35		0.0	32.0	220	20	110	4	106	18.0	68	47
75/02/26	13 00		0.0	32.0	110	5	360	5	355	3.6	77	70
75/04/02	14 30		0.0	32.0	240	2K	110	0.4	110	15.0	66	57
75/04/17	10 45		0.0	32.0	3300	5	110	14	96	25.0	41	26
75/05/01	11 45		1.1	34.0	230	11	66	10	56	10.0	25	16
75/05/06	11 00		8.9	48.0	41	2	71	7	64	7.2	26	17
75/05/15	11 45		8.9	48.0	950	27	70	5	65	4.4	33	22
75/05/22	11 00		16.7	62.0	1700	33	86	2	84	3.2	44	37
75/06/18	13 00		17.2	63.0	230	23	105	1	104	5.8	42	44

STORET RETRIEVAL DATE 75/09/13

020 MPCA024 SPL-0.1
47 10 52.0 091 24 21.0
SPLIT ROCK R. NEAR CASTLE DANGER
27 MINNESOTA
LAKE SUPERIOR BASIN
LAKE SUPERIOR BASIN IN MINNESOTA
21MINN 2111204
2 0999 FEET DEPTH

DATE FROM TO	TIME	DEPTH OF DAY	FEET	00400 PH SU	00300 DO MG/L	00310 BOD 5 DAY MG/L	00665 PHOS-TOT MG/L P	00610 NH3-N TOTAL MG/L	00615 NO2-N TOTAL MG/L	00620 NO3-N TOTAL MG/L	00605 ORG N N MG/L	00600 TOTAL N N MG/L	00095 CNDUCTVY AT 25C MICROMHO
73/07/26	13	00		7.80	8.5	1.1	0.060						98
73/08/29	11	40		7.90	6.2	0.5	0.070	0.070	0.010	0.100K	0.770	0.85	110
73/09/12	13	00		7.90	9.6	0.9	0.020	0.070	0.010	0.100K	0.810	0.89	100
73/09/25	15	30		7.80	9.8	0.9	0.020	0.060	0.010K	0.100	0.760	0.94	110
73/10/15	14	20		7.60	11.4	0.5	0.040	0.050K	0.010K	0.100K	1.000	1.20	63
73/11/13	14	30		7.60	13.4	0.5K	0.020	0.160	0.010K	0.170	0.490	0.82	92
73/12/04	14	00		7.90	13.9	0.9	0.060	0.080	0.010	0.150	0.250	0.49	89
74/01/29	13	00		7.80	14.2	0.9	0.170	0.110	0.010	0.160	0.430	0.71	150
74/02/26	14	45		7.90	10.1	1.3	0.040	0.050K	0.010K	0.230	0.690	0.92	160
74/03/12	14	45		7.60	14.4	0.5K	0.020	0.050K	0.010	0.420	0.440	0.87	130
74/04/04	11	15		7.80	14.6	1.8	0.020	0.050K	0.010K	0.310	0.290	0.60	140
74/04/08	12	00		7.80	14.9	0.6	0.030	0.050K	0.010	0.250	0.340	0.60	120
74/04/24	11	30		7.20	13.4	0.8	0.030	0.050K	0.010	0.190	0.700	0.90	42
74/05/03	12	00		7.70	11.7	0.5K	0.030	0.050K	0.010	0.100K	0.670	0.68	59
74/05/15	13	30		6.80	11.8	1.5	0.050	0.050K	0.020	0.240	0.560	0.82	45
74/05/13	12	15		7.80	10.0	1.5	0.030	0.370	0.010K	0.100K	0.940	1.21	71
74/07/10	13	15		7.90	7.1	1.3	0.020	0.120	0.010	0.100K	0.530	0.66	140
74/08/13	11	45		8.00	8.2	0.8	0.050	0.050K	0.050	0.400	0.350	0.80	120
74/09/12	11	15		7.90	10.1	0.5K	0.010	0.330	0.010	0.100K	0.590	0.93	140
74/10/04	13	30		7.80	11.8	1.1	0.010	0.050K	0.010	0.120	0.390	0.52	130
74/11/05	14	00		7.20	13.1	0.7	0.030	0.050K	0.050	0.100	0.630	0.73	100
74/12/11	13	00		7.20	14.2	1.1	0.020	0.050K	0.030	0.310	0.670	1.01	170
75/01/16	12	35		7.80	13.7	1.2	0.870	0.120	0.040	0.830	0.350	1.35	110
75/02/26	13	00		7.70	14.1	1.8	0.020	0.080	0.020	0.440	0.370	0.91	140
75/04/02	14	30		7.50	14.0	0.6	0.110	0.260	0.020	0.330	0.560	1.17	130
75/04/17	13	45		7.00	13.1	1.5	0.070	0.060	0.050	0.590	0.720	1.42	69
75/05/01	11	45		6.90	14.1	0.6	0.060	0.050K	0.030	0.240	0.510	0.78	39
75/05/08	11	00		7.10	11.0	0.7	0.040	0.060	0.040	0.170	0.590	0.86	43
75/05/15	11	45		6.90	10.4	0.7	0.060	0.050K	0.040	0.140	0.440	0.62	65
75/05/22	11	00		7.10	9.0	0.8	0.010	0.070	0.010	0.100K	0.480	0.56	88
75/06/18	13	00		7.60	9.0	1.4	0.050	0.050K	0.050	0.100K	1.700	1.75	83

START RETRIEVAL DATE 75/09/18

020 MPCA024 SPL-3.1
47 10 52.0 091 24 21.0
SPLIT ROCK R. NEAR CASTLE DANGER
27 MINNESOTA
LAKE SUPERIOR BASIN
LAKE SUPERIOR BASIN IN MINNESOTA
21MINN 2111204
2 0999 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	00940 CHLORIDE CL MG/L	00945 SULFATE SO4-TOT MG/L	00950 FLUORIDE F,DISS MG/L	01042 COPPER CU,TOT UG/L	01027 CADMIUM CD,TOT UG/L	01067 NICKEL NI,TOTAL UG/L	01092 ZINC ZN,TOT UG/L	01051 LEAD PB,TOT UG/L	01045 IRON FE,TOT UG/L	01055 MANGNESE MN UG/L
73/07/26	13 00		2		0.10							
73/08/27	11 40		1K		0.21	10K	10K	10K	10K	10K	450	11.0
73/09/12	13 30		2		0.15	13	10K	10K	10K	10K	730	26.0
73/09/25	13 30		5	10	0.14	10K	10K	10K	10K	10K	840	10.0K
73/10/15	14 20		2								730	10.0K
73/11/15	14 30		3			10K	10K	10K	10K	10K	1100	10.0
73/12/04	14 00		2		0.11	10K	10K	10K	10K	10K	950	10.0K
74/01/29	13 00		2	12	0.13						750	10.0K
74/02/26	14 45		3	11	0.11	10K	10K	10K	10K	10K	730	10.0
74/03/12	14 45		3		0.14						490	10.0K
74/04/04	11 15		3	10	0.15						330	5.0K
74/04/09	12 00		2	13	0.14	10K	10K	10K	13	10K	420	10.0K
74/04/24	11 30		4	5K	0.10	10K	10K	10K	32	10K	660	67.0
74/05/06	12 00		5	13	0.11	10K	10K	10K	10K	10K	2400	16.0
74/05/15	13 30		1	7	0.11	10K	10K	10K	32	10K	880	13.0
74/05/19	12 15		4	12	0.12	10K	10K	13	11	10K	1400	10.0K
74/07/10	13 15		6	11	0.17	10K	10K	10K	14	10K	640	19.0
74/08/13	11 45		6	5	0.15	10K	10K	10K	10K	10K	210	10.0K
74/09/12	11 15		7	8	0.17	10K	10K	10K	10K	10K	610	10.0K
74/10/07	13 30		2	5K	0.15	10K	10K	10K	10K	10K	400	22.0
74/11/05	13 00		3	9	0.13	10K	10K	11	10K	10K	590	10.0K
74/12/11	13 00		4	10	0.15	10K	10K	10K	10K	10K	990	10.0K
75/01/16	12 30		5	14	0.10	10K	10K	10K	10K	10K	550	10.0K
75/02/25	13 00		3	10	0.16	10K	10K	10K	39	10K	1500	10.0K
75/04/02	14 30		4	11	0.17	10K	10K	10K	28	10K	620	12.0
75/04/17	13 45		4	11	0.10K	10K	10K	10K	23	10K	1100	42.0
75/05/01	11 45		2	9	0.08	10K	10K	10K	18	10K	1800	45.0
75/05/08	11 00		1	10	0.13	10K	10K	10K	33	10K	880	120.0
75/05/15	11 45		3	9	0.12	10K	10K	10K	130	16	1200	120.0
75/05/22	11 00		4	9	0.14	10K	10K	10K	97	10K	520	240.0
75/06/18	13 00		2	5K	0.18	10K	10K	10K	10K	10K	480	10.0K

STORET RETRIEVAL DATE 75/03/18

020 4PCA024 SPL-0.1
47 10 52.0 091 24 21.0
SPLIT ROCK R. NEAR CASTLE DANGER
27 MINNESOTA
LAKE SUPERIOR BASIN
LAKE SUPERIOR BASIN IN MINNESOTA
21MINN 2111204
2 0595 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	00915 CALCIUM CA,DISS MG/L	00930 SODIUM NA,DISS MG/L	00935 POTASSIUM K,DISS MG/L	32730 PHENOLS TOTAL UG/L	00955 SILICA DISSOLVED MG/L	00061 STREAM FLOW, INST-CFS
73/07/26	13 00		33.0	6.00	1.00	9	11.0	25
73/08/29	11 40		30.0	4.00	1.00K	3	13.0	20
73/09/12	15 30		45.0	2.00	1.00K	4	14.0	20
73/09/25	15 30		50.0	1.00	1.00K	2K	11.0	42
73/10/16	14 20					2K	12.0	51
73/11/13	14 30					21	11.0	64
73/12/04	14 00		24.0	4.20	1.00K	2K	13.0	15
74/01/22	15 00		47.0	5.30	1.00	3	15.0	2
74/02/26	14 45		76.0	4.50	1.00K	2K	16.0	7
74/03/12	14 45		51.0	6.30	0.90	2K	17.0	10
74/04/04	11 15		43.0	5.50	1.70	3	16.0	13
74/04/09	12 00		40.0	8.10	1.30	2K	15.0	9
74/04/24	11 30		12.0	2.60	1.00K	2	9.2	137
74/05/03	12 00		25.0	1.70	1.10	7	5.2	79
74/05/15	13 30		13.0	2.00	1.00K	10	8.5	30
74/05/18	12 15		25.0	3.90	0.90	2K	7.6	30
74/07/10	13 15		57.0	2.60	1.20	2K	9.1	7
74/08/13	11 45		45.0	3.00	1.00K	3	7.8	8
74/09/12	11 15		54.0	4.00	1.00K	2K	7.6	3
74/10/09	15 30		40.0	5.90	1.20	2	9.8	24
74/11/05	10 00		29.0	4.30	1.00K	5	10.0	15
74/12/11	13 00		64.0	3.60	1.00K	2K	15.0	20
75/01/15	12 35		32.0	1.30	1.60	2	12.0	2
75/02/25	13 00		47.0	5.00	2.00	2K	14.0	2
75/03/02	14 30		39.0	4.00	1.00K	2K	11.0	462
75/03/17	13 45		24.0	1.60	1.00K	19		421
75/03/01	11 45		17.0	0.80	0.60		6.5	433
75/03/08	11 00		16.0	0.90	0.90	2K	7.1	315
75/03/15	11 45		20.0	1.40	0.50	2K	4.9	172
75/03/22	11 00		32.0	2.70	1.10	2K	5.4	70
75/03/13	13 00		30.0	2.50	0.60	4	6.6	13

STORET RETRIEVAL DATE 75/10/15

020 MPCA024 SPL-0.1
47 10 52.0 091 24 21.0
SPLIT ROCK R. NEAR CASTLE DANGER
27 MINNESOTA
LAKE SUPERIOR BASIN
LAKE SUPERIOR BASIN IN MINNESOTA
21MINN 2111204
2 0999 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	00720 CYANIDE CN-TOT MG/L	00335 COD LOWLEVEL MG/L	00680 T ORG C C MG/L	01002 ARSENIC AS,TOT UG/L	01007 BARIUM BA,TOT UG/L	01034 CHROMIUM CR,TOT UG/L	71900 MERCURY HG,TOTAL UG/L	01147 SELENIUM SE,TOT UG/L	00920 MGNSIUM CACO3 MG/L
73/08/29	11 40				18.6						
73/09/12	16 50				22.0				0.1K		
73/09/25	15 30		0.005K	50.0K	21.4	10K	20K	2K	0.6	2K	12.0
73/10/16	14 20				23.5				0.3		
73/12/04	14 00				8.0				0.4		
74/01/29	15 00				8.8						
74/02/26	14 45		0.005K	50.0K		10K	20K	3	0.2	2K	16.0
74/03/12	14 45				6.2						
74/04/09	12 00				5.0						
74/04/24	11 30		0.005K	50.0K		10K	10K	2K	1.0	2K	6.0
74/05/15	13 30				11.0						
74/06/18	12 15				9.2						
74/09/12	11 15		0.005K	50.0K		10K	15K	2K	0.1K	2K	13.0
75/02/26	13 00		0.005K	28.0	8.0	10K	15K	1	0.1K	2K	30.0
75/05/01	11 45		0.005K	39.0	15.0	10K	15K	3	0.1K	2K	8.0

STORET RETRIEVAL DATE 75/09/18

020 MPCA024 SPL-0.1
47 10 52.0 091 24 21.0
SPLIT ROCK R. NEAR CASTLE DANGER
27 MINNESOTA
LAKE SUPERIOR BASIN
LAKE SUPERIOR BASIN IN MINNESOTA
21MINN 2111204
2 0999 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	03501 BETA TOTAL PC/L	03502 BETA-T ERROR PC/L	07000 H-3 TOTAL PC/L	07001 H-3,TOTL ERROR PC/L	13501 SR-90 TOTAL PC/L	13502 SR-90 ERROR PC/L	09501 RA-226 TOTAL PC/L	09502 RA-226 ERROR PC/L	39370 DDT WHL SMPL UG/L	00550 OIL-GRSF TOT-SXLT MG/L
73/09/25	15 30		6	3	450.0	250.0	0.8	0.2	19.0K		0.010K	0.5K
74/02/26	14 45		3K		500.0	170.0	0.8	0.2	12.0K		0.050K	1.7
74/04/24	11 30		4K		190.0	190.0	0.5	0.2	11.0K		0.100K	0.6
74/09/12	11 15		3K		710.0	170.0	0.8	0.2	4.0K			0.5K
75/02/26	13 00		2K		360.0	200.0	0.7	0.2	3.0K		0.010	0.6
75/05/01	11 45		6	3	250.0	180.0	0.5	0.2	2.0K		0.010K	

STORET RETRIEVAL DATE 75/09/18

C30 MPCA212 SLB-1
46 45 05.0 092 06 00.0
ST. LOUIS BAY AT DULUTH-SUPERIOR
27 MINNESOTA
MAJ BASIN: LK. SUPERIOR
MIN BASIN: LAKE SUPERIOR IN MINNESOTA
21MINN 2111204
2 0060 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	00010 WATER TEMP CENT	00011 WATER TEMP FAHR	31503 TOT COLI MPN CONF /100ML	31615 FEC COLI MPNECMED /100ML	00500 RESIDUE TOTAL MG/L	00530 RESIDUE TOT NFLT MG/L	00515 RESIDUE DISS-105 C MG/L	00076 TURB JKSN JTU	00900 TOT HARD CACO3 MG/L	00410 T ALK CACO3 MG/L
73/12/07	09 30		0.0	32.0	330	79		5		12.0	64	69
74/01/28	13 30		0.6	33.0	490	130	150	5	154	3.5	56	62
74/02/25	15 30		0.0	32.0	130	8	150	12	138	3.8	58	48
74/03/11	16 00		0.0	33.0	790	330	150	5	144	4.7	69	55
74/04/04	15 15		0.0	32.0	490	79	150	3	147	5.2	72	69
74/04/11	11 30		0.0	32.0	1100	310	170	8	162	7.0	81	61
74/04/22	13 30		2.2	36.0	5400	80	110	24	65	30.0	35	24
74/05/08	15 30		7.8	46.0	490	5	120	13	107	8.0	44	28
74/05/13	15 30		7.8	46.0	460	230	120	17	103	11.0	42	31
74/05/17	14 45		15.0	59.0	230	50	130	24	106	9.0	41	36
74/07/05	15 15		20.0	68.0	700	110	110	6	104	6.7	47	40
74/08/12	12 30		16.7	62.0	490	330	150	5	145	8.9	65	55
74/09/09	13 00		12.8	55.0	20	20K	130	5	125	5.0	90	80
74/10/07	15 30		8.3	47.0	220	80	130	9	121	5.8	73	62
74/11/04	13 30		6.1	43.0	5400	230	170	8	161	4.5	82	71
74/12/09	15 45		0.0	32.0	130	80	170	10	160	10.0	74	56
75/01/14	17 00		0.0	32.0	2400	330	160	8	152	4.3	76	61
75/02/24	15 10		0.6	33.0	490	40	150	4	146	3.5	85	77
75/03/26	15 45		0.0	32.0	700	46	130	3	127	5.1	75	70
75/04/15	13 25		1.7	35.0	2400	170	150	5	145	8.8	100	83
75/05/12	10 00		5.6	42.0	5400	1700	110	25	185	15.0	40	30
75/05/05	14 50		10.0	50.0	1100	170	140	43	97	14.0	45	27
75/05/13	14 15		13.3	56.0	330	20	120	8	112	5.4	49	33
75/05/20	14 45		14.4	58.0	1700	20	110	4	106	3.5	35	34
75/05/16	13 00		17.2	63.0	1300	130	150	10	140	3.1	74	62

STORET RETRIEVAL DATE 75/09/18

030 MPCA212 SLB-1
46 45 03.0 092 06 00.0
ST. LOUIS BAY AT DULUTH-SUPERIOR
27 MINNESOTA
MAJ BASIN: L. SUPERIOR
MIN BASIN: LAKE SUPERIOR IN MINNESOTA
21MINN 2111204
2 0000 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	00400 PH SU	00300 DO MG/L	00310 BOD 5 DAY MG/L	00665 PHOS-TOT MG/L P	00610 NH3-N TOTAL MG/L	00615 NO2-N TOTAL MG/L	00620 NO3-N TOTAL MG/L	00605 ORG N N MG/L	00600 TOTAL N N MG/L	00095 CNDUCTVY AT 25C MICROMHO
73/12/07	09	30	7.50	11.7	3.4	0.140	0.150	0.030	0.400	0.990	1.15	150
74/01/28	15	30	6.90	9.7	6.1	0.130	0.560	0.030	0.160	1.400	2.05	180
74/02/25	15	30	6.90	10.6	4.3	0.140	0.270	0.010	0.100K	1.200	1.48	170
74/03/11	15	00	5.80	12.4	3.8	0.130	0.300	0.020	0.350	0.970	1.64	200
74/03/04	13	15	7.10	12.6	4.8	0.140	0.350	0.010	0.460	1.000	1.82	180
74/03/11	11	00	7.30	12.2	6.2	0.110	0.330	0.030	0.110	0.950	1.42	190
74/03/22	13	30	7.70	11.9	4.1	0.110	0.150	0.040	0.150	1.200	1.54	88
74/03/09	10	00	7.60	9.3	2.2	0.010K	0.370	0.020	0.100K	1.200	1.59	110
74/03/13	15	30	8.00	13.2	4.7	0.090	0.060	0.030	0.160	1.000	1.25	110
74/03/17	14	45	7.50	7.5	1.7	0.080	0.190	0.020	0.100K	0.050	0.25	100
74/03/08	13	15	7.70	6.9	2.9	0.100	0.380	0.010	0.340	1.000	0.73	88
74/03/12	12	30	7.00	5.8	1.3	0.120	0.280	0.040	0.240	0.250	0.81	150
74/03/09	13	00	7.70	7.5	1.4	0.110	0.260	0.050	0.950	0.900	2.15	150
74/03/07	13	30	8.10	8.7	1.9	0.110	0.190	0.020	0.190	0.720	1.12	160
74/11/04	13	30	7.80	9.1	2.5	0.150	0.050K	0.070	0.140	0.290	0.50	200
74/12/02	15	45	7.40	5.9	3.6	0.130	0.340	0.020	0.190	1.200	1.75	190
75/01/14	17	00	7.50	4.7	5.9	0.140	0.530	0.010	0.220	0.410	1.17	200
75/02/24	15	10	7.80	9.1	3.0	0.110	0.570	0.040	0.410	0.710	1.84	190
75/03/26	15	45	7.60	8.8	2.2	0.100	0.420	0.010	0.220	0.850	1.50	180
75/04/15	13	25	7.50	9.0	2.1	0.110	0.260	0.250	0.710	0.630	1.85	200
75/05/02	10	00	7.30	12.4	1.7	0.090	0.050	0.020	0.320	0.770	1.25	74
75/05/05	14	50	7.70	11.5	2.3	0.120	0.110	0.050	0.310	0.350	1.33	95
75/05/13	14	15	7.50	8.2	1.9	0.030	0.150	0.040	0.130	1.100	1.42	91
75/05/20	14	45	7.30	9.5	2.1	0.050	0.140	0.020	0.100K	0.830	0.99	100
75/05/16	13	00	7.50	9.5	3.1	0.060	0.150	0.050	0.100K	1.300	1.50	150

TIRET RETRIEVAL DATE 75/09/18

030 MPCA212 SLB-1
46 45 05.0 092 06 00.0
ST. LOUIS BAY AT DULUTH-SUPERIOR
27 MINNESOTA
MAJ BASIN: LK. SUPERIOR
MIN BASIN: LAKE SUPERIOR IN MINNESOTA
21MINN 2111204
2 0000 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	00940 CHLORIDE CL MG/L	00945 SULFATE SO4-TOT MG/L	00950 FLUORIDE F,DISS MG/L	01042 COPPER CU,TOT UG/L	01027 CADMIUM CD,TOT UG/L	01067 NICKEL NI,TOTAL UG/L	01092 ZINC ZN,TOT UG/L	01051 LEAD PB,TOT UG/L	01045 IRON FE,TOT UG/L	01055 MANGNESE MN UG/L
74/12/07	09 30		11	24	0.11	75	10K	10K	120	32	1000	91.0
74/01/28	13 30		13	22	0.23						1100	180.0
74/02/25	16 30		11	22	0.13	10K	10K	10K	16	10K	750	140.0
74/03/11	15 00		13	27	0.13						530	110.0
74/03/04	13 15		14	24	0.14						830	170.0
74/04/11	11 00		15	35	0.15	42	10K	10K	110	17	930	240.0
74/04/22	13 30		2	15	0.10K	42	10K	10K	99	18	2300	170.0
74/05/09	10 00		9	20	0.10	79	10K	10K	140	26	1500	130.0
74/05/13	15 30		12	15	0.10	10K	10K	10K	16	12	1400	130.0
74/05/17	14 45			5K	0.10K	10K	10K	11	16	10K	1600	56.0
74/05/31	13 15		3	8	0.10K	10K	10K	25	10K	20	640	10.0K
74/06/12	12 30		15	12	0.13	75	10K	10K	25	10K	1400	100.0
74/09/04	13 00		14	12	0.11	10K	10K	10K	14	10K	950	30.0
74/10/07	13 30		7	27	0.10	10K	10K	10K	10K	10K	1000	150.0
74/11/04	13 30		23	10	1.10	10K	10K	11	10	14	1100	10.0K
74/12/04	15 45		14	20	0.16	10	10K	16	44	10K	1100	300.0
75/01/14	17 30		9	19	0.15	10K	10K	10K	37	10K	890	190.0
75/02/24	15 10		14	15	0.16	10K	10K	10K	51	10K	470	95.0
75/03/25	15 45		14	13	0.16	10K	10K	10K	20	10K	570	130.0
75/04/15	13 25		19	17	0.13	10K	10K	10K	23	10K	570	150.0
75/05/02	10 00		7	13	0.10K	72	10K	10K	10K	10K	1200	33.0
75/05/05	14 30		16	12	0.10K	10K	10K	10K	19	10K	1700	10.0K
75/05/13	14 15		7	12	0.10K	12	10K	10K	56	10K	960	76.0
75/05/20	14 45		7	12	0.95	13	10K	10K	740	10K	960	10.0K
75/06/16	13 00		10	13	0.21	10K	10K	10K	14	10K	710	77.0

STORET RETRIEVAL DATE 75/09/18

030 MPCA212 SLB-1
46 46 05.0 092 05 30.0
ST. LOUIS BAY AT DULUTH-SUPERIOR
27 MINNESOTA
MAJ BASIN: LK. SUPERIOR
MIN BASIN: LAKE SUPERIOR IN MINNESOTA
21MINN 2111204
2 0000 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	00910 CALCIUM CA,DIS MG/L	00930 SODIUM NA,DISS MG/L	00935 POTSSIUM K,DISS MG/L	32730 PHENOLS TOTAL UG/L	00955 SILICA DISOLVED MG/L	00061 STREAM FLOW, INST-CFS
73/12/07	09 30		36.0	11.00	1.50	23	19.0	1330
74/01/28	13 30		39.0	20.00	5.20	12	13.0	1698
74/02/25	10 30		43.0	9.60	1.20	10	12.0	1653
74/03/11	15 00		33.0	15.00	1.60	15	14.0	2054
74/04/04	15 15		39.0	14.00	2.40	12	16.0	1466
74/04/11	11 00		48.0	16.00	1.20	17	16.0	1555
74/04/22	13 30		24.0	2.10	1.60	4	6.9	1520
74/05/03	13 00		23.0	3.10	2.00	4	5.2	4715
74/05/13	15 30		28.0	4.70	3.00	2	13.0	10534
74/05/17	14 45		37.0	3.90	1.40	2	7.6	6044
74/07/08	13 15		40.0	3.00	1.20	3	8.1	1438
74/08/12	12 30		37.0	3.00	1.70	15	3.6	1447
74/09/09	13 00		78.0	8.90	1.90	3	3.7	1187
74/10/07	13 30		65.0	14.00	1.40	8	7.1	1133
74/11/04	13 30		60.0	11.00	1.90	20	4.9	2979
74/12/09	13 45		53.0	10.00	2.20	11	7.6	893
75/01/14	17 00		45.0	6.10	1.00K	4	7.2	1193
75/02/24	13 10		55.0	14.00	1.80	9	8.4	1430
75/03/26	13 45		50.0	11.00	1.30	12	8.2	1040
75/04/15	13 25		60.0	13.00	1.30	17		1640
75/05/02	10 00		24.0	2.90	1.30	8	5.9	20931
75/05/05	14 50		20.0	3.60	3.80	6	5.7	13531
75/05/13	14 15		29.0	3.10	2.40	37	4.8	5451
75/05/20	14 45		26.0	4.40	1.20	3	1.7	4451
75/06/16	13 00		68.0	7.70	1.30	5	4.2	8501

STORET RETRIEVAL DATE 75/10/15

030 MPCA212 SLB-1
46 45 05.0 092 06 00.0
ST. LOUIS BAY AT DULUTH-SUPERIOR
27 MINNESOTA
MAJ BASIN: LK. SUPERIOR
MIN BASIN: LAKE SUPERIOR IN MINNESOTA
21MINN 2111204
2 0000 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	00720 CYANIDE CN-TOT MG/L	00335 COD LOWLEVEL MG/L	00680 T ORG C C MG/L	01002 ARSENIC AS,TOT UG/L	01007 BARIUM BA,TOT UG/L	01034 CHROMIUM CR,TOT UG/L	71900 MERCURY HG,TOTAL UG/L	01147 SELENIUM SE,TOT UG/L	00920 MGNSIUM CACO3 MG/L
74/02/25	16	30	0.005K	50.0K		10K	20K	5	0.3	2K	13.0
74/04/04	15	15			23.7						
74/04/11	11	00			22.5						
74/04/22	13	30	0.005K	50.0K	12.5	10K	10K	2K	0.3	2K	11.0
74/05/13	15	30			19.5						
74/06/17	14	45			17.8				0.3		
74/08/12	12	30				10K				2K	
74/09/09	13	00	0.005K	50.0K		10K	12K	2K	0.2	2K	12.0
75/02/24	15	10	0.006	42.0	16.0	10K	15K	2	0.1K	2K	30.0
75/05/02	10	00	0.005K	49.0	13.0	10K	15K	3	0.1	2K	24.0
75/07/21	14	50		73.0	35.0	10K			0.1K	2K	

STORET RETRIEVAL DATE 75/09/18

030 MPCA212 SLB-1
46 45 05.0 092 06 00.0
ST. LOUIS BAY AT DULUTH-SUPERIOR
27 MINNESOTA
MAJ BASIN: LK. SUPERIOR
MIN BASIN: LAKE SUPERIOR IN MINNESOTA
21MINN 2111204
2 0000 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	03501 BETA TOTAL PC/L	03502 BETA-T ERROR PC/L	07000 H-3 TOTAL PC/L	07001 H-3,TOTL ERROR PC/L	13501 SR-90 TOTAL PC/L	13502 SR-90 ERROR PC/L	09501 RA-226 TOTAL PC/L	09502 RA-226 ERROR PC/L	39370 DDT WHL SMPL UG/L	00550 OIL-GRSE TOT-SXLT MG/L
74/02/25	16 30		4	2							0.050K	3.4
74/04/22	13 30		7	4	330.0	170.0	0.8	0.2	12.0K		0.100K	3.0
74/09/09	13 00		5	3	540.0	180.0	0.7	0.2	2.0K			0.5K
75/02/24	15 10		6	3	250.0	200.0	0.7	0.3	4.0K		0.010K	1.3
75/05/02	10 00		8	3	370.0	180.0	0.7	0.2	2.0K		0.010K	0.8

STORET RETRIEVAL DATE 75/09/18

014 MPCA016 SL-4
46 40 36.0 092 12 09.0
ST. LOUIS RIVER AT OLIVER
27 MINNESOTA
MAJ BASIN: LAKE SUP.
MIN BASIN: LAKE SUPERIOR IN MINNESOTA
21MINN 2111204
2 0999 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	00010 WATER TEMP CENT	00011 WATER TEMP FAHN	31505 TOT COLI MPN CONF /100ML	31615 FEC COLI MPNECMED /100ML	00500 RESIDUE TOTAL MG/L	00530 RESIDUE TOT NFLT MG/L	00515 RESIDUE DISS-105 C MG/L	00070 TURB JKSN JTU	00900 TOT HARD CACO3 MG/L	00410 T ALK CACO3 MG/L
73/07/23	14 00		21.1	70.0	2400	110		3		3.6	51	54
73/08/28	12 30		22.8	73.0	2400	20		7		3.6	54	55
73/09/11	15 30		20.0	68.0	35000	4900		7		4.5	58	64
73/09/24	15 30		12.2	54.0	5400	20		9		3.0	84	66
73/10/15	14 45		10.0	50.0	1300	310		42		21.0	92	40
73/11/12	14 00		2.8	37.0	11000	220		1		4.7	120	98
73/12/03	15 30		1.1	34.0	3500	210		5		5.1	53	65
75/04/18	09 45		8.6	33.0	9200	490	190	56	134	21.0	93	72
75/04/29	12 15		2.8	37.0	5400	280	120	46	74	17.0	40	28
75/05/05	14 00		10.0	50.0	2400	220	120	22	98	12.0	40	26
75/05/13	13 30		14.4	58.0	110000	50	120	16	104	7.0	49	37
75/05/20	14 00		15.6	60.0	3500	130	130	16	114	7.8	51	44
75/06/16	12 25		16.1	61.0	23000	1100	143	16	127	8.2	64	53

STORET RETRIEVAL DATE 75/09/13

014 MPCA015 SL-4
46 40 35.0 092 12 09.0
ST. LOUIS RIVER AT OLIVER
27 MINNESOTA
MAJ BASIN: LAKE SUP.
MIN BASIN: LAKE SUPERIOR IN MINNESOTA
21MINN 2111204
2 0999 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	00400 PH SU	00300 DO MG/L	00310 BOD 5 DAY MG/L	00665 PHOS-TOT MG/L P	00610 NH3-N TOTAL MG/L	00615 NO2-N TOTAL MG/L	00620 NO3-N TOTAL MG/L	00605 ORG N N MG/L	00600 TOTAL N N MG/L	00095 CNDUCTVY AT 25C MICROMHO
73/11/23	14 00		7.20	2.9	3.8	0.100						170
73/06/28	12 30		7.30	2.8	3.1	0.120	0.210	0.020	0.100K	1.300	1.50	150
73/09/11	15 30		7.50	6.3	3.7	0.210	0.090	0.020	0.100K	1.300	1.40	140
73/09/24	15 30		7.80	6.2	3.7	0.110	0.140	0.020	0.010K	1.300	1.40	210
73/10/15	14 45		7.50	11.1	2.2	0.150	0.070	0.020	0.170	1.400	1.66	88
73/11/12	14 00		7.40	12.5	7.2	2.400	0.240	0.020	0.110	1.200	1.57	160
73/12/03	13 30		7.20	12.3	8.2	0.410	0.120	0.020	0.180	0.950	1.17	170
75/04/18	09 45		7.00	12.8	6.3	0.210	0.720	0.070	0.600	1.100	2.01	170
75/04/29	12 15		7.60	13.4	2.2	0.130	0.080	0.040	0.330	1.000	1.45	69
75/05/05	14 00		7.80	10.8	2.3	0.030	0.050K	0.050	0.290	0.770	1.11	90
75/05/13	13 30		7.60	9.3	3.2	1.000	0.120	0.040	0.100K	0.370	0.53	93
75/05/20	14 00		7.30	7.3	2.0	0.070	0.050K	0.030	0.100K	0.960	0.99	110
75/05/16	12 25		7.50	9.0	3.1	0.090	0.050K	0.040	0.100K	1.100	1.14	110

STORET RETRIEVAL DATE 75/09/18

014 MPCA016 SL-4
46 40 30.0 092 12 09.0
ST. LOUIS RIVER AT OLIVER
27 MINNESOTA
MAJ BASIN: LAKE SUP.
MIN BASIN: LAKE SUPERIOR IN MINNESOTA
21MINN 2111204
2 0999 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	00940 CHLORIDE CL MG/L	00945 SULFATE SO4-TOT MG/L	00950 FLUORIDE F,DISS MG/L	01042 COPPER CU,TOT UG/L	01027 CADMIUM CD,TOT UG/L	01067 NICKEL NI,TOTAL UG/L	01092 ZINC ZN,TOT UG/L	01051 LEAD PB,TOT UG/L	01045 IRON FE,TOT UG/L	01055 MANGNESE MN UG/L
73/07/23	14 00		15		0.10							
73/08/29	12 30		6		0.17	10K	10K	10K	36	10K	1200	160.0
73/09/11	15 30		8		0.10K	13	10K	10K	40	10K	909	115.0
73/09/24	13 30		23	27	0.37	10K	10K	10K	11	11	1700	150.0
73/10/15	14 45		5								1200	43.0
73/11/12	14 30		3		0.11						9200	150.0
73/12/03	15 30		10		0.11	50	10K	10K	99	27	1300	10.0
75/04/18	09 45		12	17	0.11	10K	10K	10K	18	10K	930	67.0
75/04/29	12 15		6	12	0.10K	10K	10K	10K	25	18	1600	230.0
75/05/05	14 00		6	12	0.10K	10K	10K	10K	10K	10K	1600	58.0
75/05/15	13 30		7	12	0.10K	470	10K	45	18	10K	1200	10.0K
75/05/20	14 00		9	13	0.10K	10K	10K	10K	150	10K	1300	105.0
75/06/16	12 25		6	10	0.18	10K	10K	10K	14	10K	890	79.0

STORET RETRIEVAL DATE 75/09/18

014 MPCA016 SL-4
46 40 30.0 092 12 09.0
ST. LOUIS RIVER AT OLIVER
27 MINNESOTA
MAJ BASIN: LAKE SUP.
MIN BASIN: LAKE SUPERIOR IN MINNESOTA
21MIAA 2111204
2 0999 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	00915 CALCIUM CA,DISS MG/L	00930 SODIUM NA,DISS MG/L	00935 PTSSIUM K,DISS MG/L	32730 PHENOLS TOTAL UG/L	00955 SILICA DISOLVED MG/L	00061 STREAM FLOW, INST-CFS
73/07/25	14 00		54.0	33.00	2.00	7	9.4	1530
73/08/28	12 30		64.0	22.00	1.00	3	11.0	1490
73/09/11	13 30		52.0	11.00	2.00	52	2.0K	2340
73/09/24	13 30		60.0	24.00	2.00	10	12.0	1480
73/10/15	14 45		32.0			5	11.0	16900
73/11/12	14 00		57.0	7.00	2.00	2K	12.0	4990
73/12/03	13 30		34.0	11.00	1.60	28	13.0	2820
75/04/18	07 45		52.0	6.40	1.80	8		15500
75/04/21	12 15		24.0	2.10	1.20	7	5.7	20900
75/05/05	14 00		28.0	3.40	1.10	10	5.7	13500
75/05/18	13 30		34.0	3.30	2.20	10	4.6	3430
75/05/20	14 00		54.0	5.70	1.60	11	1.4	3430
75/06/16	12 25		36.0	4.10	0.80	11	4.9	8740

STORET RETRIEVAL DATE 75/10/15

014 MPCA016 SL-4
46 40 36.0 092 12 09.0
ST. LOUIS RIVER AT CLIVER
27 MINNESOTA
MAJ BASIN: LAKE SUP.
MIN BASIN: LAKE SUPERIOR IN MINNESOTA
21MINN 2111204
2 0999 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	00720 CYANIDE CN-TOT MG/L	00335 COD LOWLEVEL MG/L	00680 T ORG C C MG/L	01002 ARSENIC AS,TOT UG/L	01007 BARIUM BA,TOT UG/L	01034 CHROMIUM CR,TOT UG/L	71900 MERCURY HG,TOTAL UG/L	01147 SELENIUM SE,TOT UG/L	00920 MGNSIUM CACO3 MG/L
73/09/24	15	30	0.005K	96.0	38.3	10K	20K	2K	1.0	5K	50.0
73/10/15	14	45			34.0				0.5		
73/11/12	14	00			34.9						
73/12/03	15	30			20.4						
75/04/29	12	15	0.005K	51.0	21.0	10K	15K	11	0.1K	2K	16.0

STORET RETRIEVAL DATE 75/09/18

014 MPCA016 SL-4
46 40 36.0 092 12 09.0
ST. LOUIS RIVER AT OLIVER
27 MINNESOTA
MAJ BASIN: LAKE SUP.
MIN BASIN: LAKE SUPERIOR IN MINNESOTA
21MINN 2111204
2 0999 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	03501 BETA TOTAL PC/L	03502 BETA-T ERROR PC/L	07000 H-3 TOTAL PC/L	07001 H-3,TOTL ERROR PC/L	13501 SR-90 TOTAL PC/L	13502 SR-90 ERROR PC/L	09501 RA-226 TOTAL PC/L	09502 RA-226 ERROR PC/L	39370 DDT WHL SMPL UG/L	00550 OIL-GRSE TOT-SXLT MG/L
73/09/24	15 30		6	3	240.0K		1.1	0.2	6.5K		0.020	0.5K
75/04/29	12 15		13	3	340.0	210.0	0.7	0.2	3.0K		0.010K	2.5

STORET RETRIEVAL DATE 75/09/19

017 MPCA021 SUC-0.2
46 55 22.0 091 50 54.0
SUCKER R. NEAR DULUTH
27 MINNESOTA
LAKE SUPERIOR BASIN
LAKE SUPERIOR BASIN IN MINNESOTA
21MINN 2111204
2 0959 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	00010 WATER TEMP CENT	00011 WATER TEMP FAHN	31503 TOT COLI MPN CONF /100ML	31515 FEC COLI MPNECMEC /100ML	00500 RESIDUE TOTAL MG/L	00530 RESIDUE TOT VFLT MG/L	00515 RESIDUE DISS-105 C MG/L	00070 TURB JKSN JTU	00900 TOT HARD CACO3 MG/L	00410 T ALK CACO3 MG/L
73/07/24	11 45		17.2	63.0	790	130		3		1.1	79	90
73/08/28	15 55		22.2	72.0	170	49		1		1.4	95	75
73/09/12	12 30		16.1	61.0	790	7		2		2.4	74	60
73/09/25	11 00		13.3	56.0	230	49		5		3.3	92	76
73/10/15	10 15		5.0	41.0	490	11		3		2.8		39
73/11/13	11 00		1.1	34.0	790	79		2		1.5		59
73/12/04	13 15		0.0	32.0	23	5		5		3.0	45	65
74/01/24	10 15		0.0	32.0	49	8	110	1	109	0.7	84	100
74/02/26	13 30		0.0	32.0	13	2K	120	0.4	120	1.0	86	98
74/03/12	13 50		0.0	32.0	140	46	130	1	129	1.3	110	110
74/04/02	10 00		0.0	32.0	20	20K	120	0.4	120	1.0	91	95
74/04/09	09 30		0.0	32.0	170	33	120	6	114	4.5	79	85
74/04/24	14 00		2.8	37.0	230	2	66	27	39	8.0	22	10
74/05/03	13 20		7.2	45.0	40	17	75	2	73	3.0	34	26
74/05/15	16 30		7.2	45.0	330	23	74	17	57	5.5	25	35
74/05/18	09 30		10.0	50.0	790	17	91	3	88	2.1	39	41
74/07/10	10 00		21.1	70.0	790	49	120	13	107	1.1	64	80
74/08/13	08 45		15.5	60.0	110	23	120	2	118	1.8	75	74
74/09/12	15 15		10.6	51.0	150	7	130	4	126	0.7	77	77
74/10/10	13 15		6.1	43.0	170	33	130	6	124	1.0	85	85
74/11/04	15 30		2.8	37.0	130	22	130	1	129	2.5	67	59
74/12/11	10 00		0.0	32.0	23	5	150	6	154	0.9	140	140
75/01/14	15 15		0.0	32.0	700	33	130	5	124	17.0	67	59
75/02/25	15 30		0.0	32.0	9	2K	180	2	178	1.2	95	98
75/03/26	17 20		0.0	32.0	70	23	140	0.5K	140	12.0	70	65
75/04/15	15 30		0.0	32.0	540	70	130	4	126	26.0	66	57
75/05/01	13 15		1.1	34.0	170	13	82	15	67	9.8	27	27
75/05/04	13 45		8.9	48.0	220	8	80	2	78	4.5	31	25
75/05/15	15 00		12.2	54.0	490	13	75	4	71	2.7	45	36
75/05/22	13 30		17.8	64.0	490	5	98	1	97	1.7	59	55
75/06/16	14 45		16.1	61.0	640	11	103	4	99	3.4	48	40

STORET RETRIEVAL DATE 75/09/18

017 4PCA021 SUC-0.2
46 55 22.0 091 50 54.0
SUCKER R. NEAR DULUTH
27 MINNESOTA
LAKE SUPERIOR BASIN
LAKE SUPERIOR BASIN IN MINNESOTA
21MINN 2111204
2 0999 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	00400 PH SU	00300 DO MG/L	00310 BOD 5 DAY MG/L	00665 PHOS-TOT MG/L P	00610 NH3-N TOTAL MG/L	00615 NO2-N TOTAL MG/L	00620 NO3-N TOTAL MG/L	00605 ORG N N MG/L	00600 TOTAL N N MG/L	00095 CNDUCTVY AT 25C MICROMHO
73/07/24	11 45		7.10	9.9	0.7	0.060						150
73/08/23	13 55		6.90	9.7	1.2	0.040	0.090	0.010	0.100K	0.750	0.84	120
73/09/12	12 40		7.90	9.5	0.8	0.030	0.090	0.020	0.100K	0.950	1.10	110
73/09/25	11 00		7.40	9.7	1.1	0.050	0.120	0.010	0.010K	0.800	0.93	120
73/10/15	10 15		7.00	11.8	0.5K	0.020	0.180	0.010K	0.100K	1.000	1.30	66
73/11/13	11 30		7.80	13.5	0.7	0.030	0.200	0.010	0.150	0.580	0.87	110
73/12/04	10 15		7.70	14.4	0.5K	0.040	0.050	0.010	0.050K	0.320	0.38	100
74/01/22	10 15		7.90	14.5	0.7	0.060	0.290	0.010	0.270	0.430	0.99	170
74/02/26	10 30		7.90	13.8	0.5K	0.020	0.050K	0.010K	0.150	0.460	0.63	190
74/03/12	10 50		7.90	14.1	0.5K	0.050	0.050K	0.020	0.330	0.320	0.67	200
74/04/02	10 00		7.40	14.5	3.2	0.020	0.100	0.010K	0.290	0.270	0.66	160
74/04/09	07 30		7.70	14.8	0.5K	0.030	0.050K	0.010	0.280	0.350	0.64	150
74/04/26	14 00		7.40	12.4	2.8	0.050	0.050K	0.010	0.250	0.740	1.00	50
74/05/08	13 20		7.80	11.3	0.5K	0.010K	0.050K	0.010	0.100K	0.670	0.68	72
74/05/15	15 30		7.50	11.6	0.5K	0.040	0.050K	0.020	0.110	0.550	0.71	53
74/05/19	09 30		7.90	10.4	1.0	0.260	0.460	0.010K	0.230	0.770	1.46	85
74/07/10	16 00		8.20	8.8	1.3	0.020	0.120	0.010K	0.100K	0.530	0.65	160
74/08/13	08 45		8.00	9.1	1.1	0.050	0.150	0.050	0.350	0.380	0.93	140
74/09/12	13 15		8.00	13.3	0.5K	0.030	0.150	0.010	0.180	0.470	0.91	170
74/10/10	10 15		9.30	12.0	1.5	0.010K	0.050K	0.010	0.100K	0.210	0.24	170
74/11/04	13 30		7.70	14.2	0.6	0.020	0.050K	0.010	0.130	0.580	0.74	120
74/12/11	14 00		7.20	13.8	0.9	0.030	0.050K	0.020	0.200	0.440	0.66	200
75/01/14	13 15		7.90	14.7	2.5	0.050	0.190	0.010	1.300	0.530	2.03	140
75/02/26	15 30		8.10	14.7	0.5	0.020	0.050K	0.020	0.320	0.150	0.49	180
75/03/25	17 20		8.30	14.8	1.9	0.040	0.170	0.010	0.230	0.410	0.82	170
75/04/15	13 30		7.80	12.9	1.2	0.100	0.070	0.070	0.360	0.460	0.95	110
75/05/01	13 15		7.80	11.1	0.9	0.050	0.060	0.040	0.120	0.460	0.70	43
75/05/08	13 45		7.80	11.4	0.7	0.040	0.060	0.020	0.120	0.770	0.97	55
75/05/15	15 00		7.60	13.4	1.0	0.020	0.070	0.040	0.100	0.470	0.68	74
75/05/22	13 30		7.30	9.3	0.8	0.010	0.070	0.020	0.100K	0.550	0.64	95
75/06/16	14 45		7.60	8.7	1.3	0.050	0.070	0.040	0.100K	0.820	0.93	77

STORET RETRIEVAL DATE 75/09/19

017 MPCA021 SUC-0.2
46 55 22.0 091 53 54.0
SUCKER R. NEAR DULUTH
27 MINNESOTA
LAKE SUPERIOR BASIN
LAKE SUPERIOR BASIN IN MINNESOTA
21MINN 2111204
2 0999 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	00940 CHLORIDE CL MG/L	00945 SULFATE SO4-TOT MG/L	00950 FLUORIDE F,DISS MG/L	01042 COPPER CU,TOT UG/L	01027 CADMIUM CD,TOT UG/L	01067 NICKEL NI,TOTAL UG/L	01092 ZINC ZN,TOT UG/L	01051 LEAD PB,TOT UG/L	01045 IRON FE,TOT UG/L	01055 MANGNESE MN UG/L
73/07/24	11 45		3		0.10						90	10.0K
73/08/28	13 55		1K		0.10K	10K	10K	10K	16	10K	455	21.0
73/09/12	12 30		2		0.14	42	10K	10K	16	10K	790	10.0K
73/09/25	11 30		5	9	0.13	10K	10K	10K	10K	10K	820	19.0
73/10/16	13 15		2								930	20.0
73/11/13	11 00		3			10K	10K	10K	11	10K	360	10.0K
73/12/04	13 15		1K	10	0.10	10K	10K	10K	10K	10K	370	61.0
74/01/29	13 15		1	10	0.13						230	20.0
74/02/25	10 30		1	10	0.15	10K	10K	10K	10K	12	270	10.0K
74/03/12	13 30		6		0.15						100	5.0K
74/04/02	10 00		3	11	0.18							
74/04/09	09 30		1K	10	0.27	10K	10K	10K	10K	10K	390	48.0
74/04/24	14 00		4	5K	0.10K	10K	10K	10K	27	10K	1600	10.0K
74/05/06	13 20		3	11	0.10K	10K	10K	10K	23	10K	400	59.0
74/05/15	14 30		0.5	6	0.10K	10K	10K	10K	20	10K	790	10.0K
74/06/18	09 30		6	11	0.10	10K	10K	10K	10K	10K	310	24.0
74/07/10	15 00		3	11	0.17	33	10K	10K	29	67	39	11.0
74/08/13	08 45		2	8	0.16	10K	10K	150	11	10K	2200	10.0K
74/09/12	13 15		1	9	0.18	10K	10K	10K	10K	10K	110	59.0
74/10/10	10 15		2	8	0.13	10K	10K	10K	10K	10K	69	10.0K
74/11/04	15 30		4	10	1.20	10K	10K	16	10K	10K	470	10.0K
74/12/11	10 00		2	5K	0.16	10K	10K	10K	10K	10K	160	12.0
75/01/14	15 15		5	14	0.12	10	10K	10K	37	10K	1200	10.0K
75/02/26	15 30		2	8	0.18	10K	10K	10K	10	10K	100	30.0
75/03/25	17 20		5	10	0.15	10K	10K	10K	15	10K	700	24.0
75/04/15	15 30		8	11	0.10K	10	10K	10K	35	10K	1500	42.0
75/05/01	13 15		2	9	0.10K	10K	10K	10K	18	10K	680	10.0K
75/05/08	13 45		1	9	0.33	10K	10K	21	15	10K	610	10.0K
75/05/15	17 00		6	10	0.12	10K	10K	10K	32	10K	310	270.0
75/05/22	13 30		7	2	0.13	10K	10K	10K	54	10K	150	49.0
75/06/16	14 45		2	5K	0.18	10K	10K	10K	39	10K	390	10.0

STORET RETRIEVAL DATE 75/09/18

017 MPCA021 SUC-0.2
46 55 22.0 091 50 54.0
SUCKER R. NEAR DULUTH
27 MINNESOTA
LAKE SUPERIOR BASIN
LAKE SUPERIOR BASIN IN MINNESOTA
21MINN 2111204
2 0999 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	00910 CALCIUM CA,DIS MG/L	00930 SODIUM NA,DISS MG/L	00935 POTSSIUM K,DISS MG/L	32730 PHENOLS TOTAL UG/L	00955 SILICA DISOLVED MG/L	00061 STREAM FLOW, INST-CFS
73/07/24	11 45		47.0	5.00	1.00K	5K	12.0	30
73/08/23	13 55		60.0	5.00	1.00K	7	15.0	17
73/09/12	12 30		32.0	2.00	1.00K	3	17.0	17
73/10/23	11 00		50.0	5.00	1.00K	4	16.0	23
73/12/10	13 15					2K	15.0	79
73/11/13	11 00					4	14.0	11
73/12/04	10 15		26.0	5.00	1.00K	9	15.0	17
74/01/23	10 15		60.0	8.20	2.50	2K	18.0	20
74/02/25	13 30		50.0	4.20	1.00K	3	18.0	9
74/03/12	10 50		58.0	5.70	1.00K	2K	20.0	11
74/04/02	10 00		49.0	6.00	1.20	5	15.0	9
74/05/09	09 30		54.0	7.00	1.10	2K	18.0	10
74/06/24	14 00		15.0	1.80	1.10	3	11.0	151
74/07/08	13 20		19.0	2.00	1.00	4	6.8	17
74/08/13	10 30		17.0	2.20	1.00K	2K	10.0	95
74/09/13	09 30		27.0	2.40	1.00K	2K	11.0	17
74/10/10	10 00		52.0	2.50	1.10	2K	10.0	4
74/11/13	09 45		72.0	11.00	3.80	2	11.0	5
74/12/12	13 15		55.0	3.90	1.00	5	11.0	9
75/01/10	13 15		65.0	5.80	1.00K	2K	16.0	9
75/02/11	13 30		46.0	3.20	1.10	2K	15.0	22
75/03/12	10 00		75.0	3.40	1.00K	2K	18.0	11
75/01/14	13 15		39.0	5.20	1.30	2	17.0	49
75/02/25	13 30		56.0	5.00	2.60	2K	18.0	9
75/03/26	17 20		50.0	4.20	1.30	10	16.0	17
75/04/15	13 30		58.0	3.40	1.00	2K		233
75/05/01	13 15		18.0	1.30	0.60	5	7.8	483
75/05/08	13 45		18.0	1.50	1.00	4	7.5	230
75/05/15	12 00		27.0	1.70	0.50	4	7.8	20
75/05/22	13 30		36.0	2.60	0.80	4	8.3	15
75/06/16	14 45		30.0	0.50K	0.50K	16	9.1	95

STORET RETRIEVAL DATE 75/10/15

017 MPCA021 SUC-0.2
46 55 22.0 091 50 54.0
SUCKER R. NEAR DULUTH
27 MINNESOTA
LAKE SUPERIOR BASIN
LAKE SUPERIOR BASIN IN MINNESOTA
21MINN 2111204
2 0999 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	00720 CYANIDE CN-TOT MG/L	00335 COD LOWLEVEL MG/L	00680 T ORG C C MG/L	01002 ARSENIC AS,TOT UG/L	01007 BARIUM BA,TOT UG/L	01034 CHROMIUM CR,TOT UG/L	71900 MERCURY HG,TOTAL UG/L	01147 SELENIUM SE,TOT UG/L	00920 MGNSIUM CACO3 MG/L
73/09/12	12	30			22.0				0.1K		
73/09/25	11	00	0.005K	50.0K	18.6	10K	20K	6	0.7	2K	32.0
73/10/16	10	15			27.1				0.1		
73/11/13	11	00			13.2						
73/12/04	10	15			9.5				0.3		
74/02/26	10	30	0.005K	50.0K		10K	20K	3	0.1	2K	26.0
74/03/12	10	50			8.0						
74/04/09	09	30			5.5						
74/04/24	14	00	0.005K	50.0K		10K	10K	2K	0.4	2K	7.0
74/05/08	13	20			10.5						
74/05/15	16	30			12.0						
74/06/18	09	30			10.5						
74/09/12	15	15	0.005K	50.0K		10K	15K	2K	0.1	2K	22.0
75/07/26	15	30	0.005K	13.0	6.0	10K	15K	1	0.1K	2K	39.0
75/05/01	13	15	0.005K	35.0	16.0	10K	15K	2	0.1K	2K	9.0

STORET RETRIEVAL DATE 75/09/18

017 MPCA021 SUC-0.2
+0 55 22.3 091 50 54.0
SUCKER R. NEAR DULUTH
27 MINNESOTA
LAKE SUPERIOR BASIN
LAKE SUPERIOR BASIN IN MINNESOTA
21MINN 2111204
2 0999 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	03501 BETA TOTAL PC/L	03502 BETA-T ERROR PC/L	07000 H-3 TOTAL PC/L	07001 H-3,TOTL ERROR PC/L	13501 SR-90 TOTAL PC/L	13502 SR-90 ERROR PC/L	09501 RA-226 TOTAL PC/L	09502 RA-226 ERROR PC/L	39370 DDT WHL SMPL UG/L	00550 OIL-GRSE TOT-SXLT MG/L
73/09/25	11 00		7	3	240.0K		0.6	0.2	11.0	8.0	0.010K	0.5K
74/02/26	10 30		3K		290.0	200.0	0.9	0.2	12.0K		0.050K	3.0
74/04/24	14 00		3	2	330.0	190.0	0.4	0.2	11.0K		0.100K	0.8
74/09/12	15 15		3K		390.0	170.0	0.9	0.4	3.0K			0.5K
75/02/26	15 30		3	3	290.0	200.0	0.4	0.2	3.0K		0.020	1.1
75/05/01	13 15		7	3	500.0	190.0	0.7	0.2	2.0K		0.010K	0.5K

STORET RETRIEVAL DATE 75/09/18

C24 MPCA029 TEM-9
47 33 17.0 091 52 24.0
TEMPERANCE R. NEAR SCHROEDER
27 MINNESOTA
LAKE SUPERIOR BASIN
LAKE SUPERIOR BASIN IN MINNESOTA
21MINN 2111204
2 0599 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	00010 WATER TEMP CENT	00011 WATER TEMP FAHN	31505 TOT COLI MPN CONF /100ML	31615 FEC COLI MPNECMED /100ML	00500 RESIDUE TOTAL MG/L	00530 RESIDUE TOT NFLT MG/L	00515 RESIDUE DISS-105 C MG/L	00070 TURB JKSN JTU	00900 TOT HARD CACO3 MG/L	00410 T ALK CACO3 MG/L
73/07/25	11 20		13.3	56.0	110	20		2		1.4	26	26
73/08/29	13 20		24.4	76.0	230	22		1		0.8		24
73/09/19	13 20		15.0	59.0	130	23		2		1.2	25	18
73/09/26	12 45		10.6	51.0	170	49		8		2.9	32	22
73/10/17	11 05		5.0	41.0	140	13		2		0.6		20
73/11/14	11 30		1.1	34.0	130	2K		1		1.0	53	36
73/12/05	12 20		0.0	32.0	170	2K		1		1.0	11	40
74/01/30	14 00		0.0	32.0	33	2	53	2	51	1.0	21	30
74/02/23	14 15		0.0	32.0	130	5	55	0.4	53	1.5	25	28
74/03/13	11 30		0.0	32.0	22	9	56	4	52	0.1	20	20
74/04/03	11 30		0.0	32.0	17	2	45	0.4	45	1.5	24	27
74/04/10	12 20		0.0	32.0	14	2	54	1	53	1.4	19	18
74/04/24	09 15		0.0	32.0	230	2K	52	8	44	2.0	14	10K
74/05/07	11 45		5.3	33.0	330	130	50	1	49	2.0	16	10K
74/05/15	09 45		4.4	40.0	70	17	70	19	53	1.5		
74/06/19	13 00		15.0	59.0	130	17	54	2	52	0.6	13	14
74/07/09	12 00		24.4	76.0	79	49	56	3	53	1.0	18	14
74/08/14	12 30		17.8	64.0	70	17	66	1	65	0.2K	25	23
74/09/10	14 00		10.0	50.0	23	23	60	8	52	0.8	32	17
74/10/08	13 45		6.1	43.0	31	5	70	1	69	1.7	19	16
74/11/05	13 45		3.3	38.0	170	2K	72	4	68	12.0	21	20
74/12/10	13 15		0.0	32.0	95	11	49	5	43	1.2	22	21
75/01/15	12 30		0.0	32.0	330	20K	75	56	19	4.4	22	17
75/02/26	11 55		0.6	33.0	49	2	52	0.5K	52	1.2	29	28
75/03/03	13 40		0.6	33.0	110	2K	43	0.5K	43	2.6	31	26
75/04/15	11 30		0.0	32.0	490	2K	67	2	65	7.4	33	23
75/06/30	11 15		1.7	35.0	33	2K	68	13	55	9.5	21	15
75/05/07	11 30		7.2	45.0	45	2	52	2	50	3.4	12	5
75/05/14	11 00		11.1	52.0	110	5	55	5	50	3.3	57	49
75/05/21	13 30		15.0	59.0	790	79	48	0.5K	48	1.7	15	13
75/06/17	12 00		15.6	60.0	40	17	65	3	62	1.2	22	15

STORET RETRIEVAL DATE 75/09/13

024 MPCA028 TEM-3
47 33 19.0 090 52 24.0
TEMPERANCE R. NEAR SCHROEDER
27 MINNESOTA
LAKE SUPERIOR BASIN
LAKE SUPERIOR BASIN IN MINNESOTA
21MINN 2111204
2 0999 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	00400 PH SU	00300 DO MG/L	00310 BOD 5 DAY MG/L	00665 PHOS-TOT MG/L P	00610 NH3-N TOTAL MG/L	00615 NO2-N TOTAL MG/L	00620 NO3-N TOTAL MG/L	00605 ORG N N MG/L	00600 TOTAL N N MG/L	00095 CNDUCTVY AT 25C MICROMHO
73/07/25	11	20	7.50	10.1	0.5	0.020						49
73/08/29	15	20	8.50	7.8	0.5	0.040	0.100	0.010	0.100K	0.570	0.68	51
73/09/13	15	20	7.50	9.9	1.5	0.010K	0.060	0.010K	0.140	0.560	0.78	42
73/09/25	12	45	7.40	10.5	0.5	0.040	0.170	0.010	0.300	0.650	1.13	42
73/10/17	11	05	7.30	11.9	0.5K	0.030	0.050K	0.010	0.100	0.810	0.92	40
73/11/14	11	30	7.90	13.4	0.8	0.050	0.150	0.010	0.130	0.630	0.92	44
73/12/05	12	20	7.30	12.9	0.5K	0.040	0.090	0.010K	0.440	0.740	1.27	45
74/01/30	13	00	7.20	13.9	1.3	0.070	0.140	0.010K	0.340	0.430	0.91	57
74/02/28	14	15	7.30	13.9	1.2	0.050	0.200	0.010K	0.380	0.600	1.18	62
74/03/13	11	50	6.30	14.3	0.5	0.030	0.050K	0.010K	0.480	0.450	0.93	61
74/04/03	11	50	7.50	14.7	1.5	0.020	0.140	0.010K	0.110	0.340	0.59	54
74/04/10	12	20	7.20	14.6	0.5K	0.410	0.050K	0.010	0.270	0.290	0.57	57
74/04/24	09	15	6.90	13.4	1.0	0.030	0.050K	0.010	0.400	0.900	1.31	35
74/05/07	11	45	7.50	13.1	1.5	0.030	0.050K	0.010K	0.470	0.610	1.08	33
74/05/15	09	45	8.00	12.2	0.5	0.040	0.050K	0.020	0.530	0.790	1.30	34
74/06/19	13	00	7.10	9.1	1.3	0.020	0.210	0.010	0.130	0.680	1.03	35
74/07/09	12	00	7.20	7.8	0.5K	0.030	0.250	0.020	0.100K	0.410	0.69	40
74/08/14	12	00	7.70	9.1	3.8	0.020	0.050K	0.050	0.350	0.360	0.76	57
74/09/10	14	00	7.80	10.3	0.8	0.010K	0.260	0.010	0.100K	0.520	0.89	56
74/10/08	13	45	7.20	12.2	0.5	0.010	0.050K	0.010	0.390	0.470	0.87	65
74/11/05	13	45	7.40	12.5	1.4	0.010	0.050K	0.030	0.100K	0.560	0.69	46
74/12/10	13	15	7.40	14.3	1.1	0.010	0.050K	0.030	0.210	0.520	0.91	49
75/01/15	12	30	7.20	14.9	0.8	0.040	0.060	0.030	1.300	0.420	1.81	61
75/02/25	11	35	7.50	14.1	0.5K	0.010	0.050K	0.010	0.560	0.480	1.05	61
75/04/03	13	40	7.30	14.9	0.5	0.030	0.270	0.020	0.460	0.490	1.25	56
75/04/16	11	30	7.00	14.0	1.4	0.040	0.110	0.040	0.940	0.630	1.72	62
75/04/30	11	15	6.90	13.1	1.3	0.030	0.050K	0.030	0.520	0.530	1.08	32
75/05/07	11	30	7.60	13.4	0.5	0.030	0.050K	0.030	0.370	0.450	0.85	33
75/05/14	11	00	8.10	11.3	1.0	0.050	0.050K	0.040	0.100K	0.570	0.61	110
75/05/21	10	30	7.40	9.9	0.9	0.020	0.050K	0.010	0.180	0.500	0.69	39
75/06/17	12	00	7.70	8.6	1.2	0.020	0.050K	0.020	0.100K	0.780	0.80	43

STORET RETRIEVAL DATE 75/09/13

024 MPCA02P TEM-8
47 33 19.0 090 52 24.0
TEMPERANCE R. NEAR SCHROEDER
27 MINNESOTA
LAKE SUPERIOR BASIN
LAKE SUPERIOR BASIN IN MINNESOTA
21MINN 2111204
2 0999 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	00940 CHLORIDE CL MG/L	00945 SULFATE SO4-TOT MG/L	00950 FLUORIDE F,DISS MG/L	01042 COPPER CU,TOT UG/L	01027 CADMIUM CD,TOT UG/L	01067 NICKEL NI,TOTAL UG/L	01092 ZINC ZN,TOT UG/L	01051 LEAD PB,TOT UG/L	01045 IRON FE,TOT UG/L	01055 MANGNESE MN UG/L
73/07/25	11 20		3		0.20						310	10.0
73/08/23	15 20		3		0.21	10K	10K	10K	10K	10K	380	25.0
73/09/13	13 20		2		0.15	10K	10K	10K	10K	10K	650	10.0K
73/09/28	12 45		4	11	0.23	10K	10K	10K	13	10K	580	80.0
73/10/17	11 05		4								520	5.0
73/11/14	11 30		1		0.13						430	10.0
73/12/05	12 20		2		0.13	10K	27	10K	190	10	370	40.0
74/01/30	13 00		1K	10	0.15						420	5.0K
74/02/28	14 15		6	10	0.24	10K	10K	10K	10K	10K	170	10.0K
74/03/13	11 30		1	12	0.18						420	5.0K
74/04/03	11 30		1	10	0.18	10K	10K	10K	10K	10K	410	10.0K
74/04/10	12 20		4	10	0.30	10K	10K	10K	10K	10K	500	9.0
74/04/24	09 15		4	5K	0.14	10K	10K	10K	18	10K	39	80.0
74/05/07	11 45		3	11	0.10	10K	10K	10K	10K	10K	360	90.0
74/05/15	09 45			5	0.10K	10K	10K	10K	49	10K	400	10.0K
74/05/19	13 30		5	5K	0.12	10K	10K	10K	10K	10K	290	21.0
74/07/09	12 30		2	10	0.15	10K	10K	10K	18	10K	360	37.0
74/08/14	12 00		5	5K	0.16	10K	10K	10K	10K	10K	320	27.0
74/09/10	14 00		9	9	0.23	10K	10K	10K	10K	10K	330	33.0
74/10/08	13 45		3	8	0.16	10K	10K	10K	10K	10K	450	33.0
74/11/06	13 45		3	5K	0.18	23	10K	16	51	15	670	10.0K
74/12/10	13 15		2	5K	0.16	10K	10K	10K	10K	10K	340	20.0
75/01/15	12 30		2	11	0.13	10K	10K	10K	35	10K	400	10.0K
75/02/25	11 35		3	10	0.16	10K	10K	10K	17	10K	260	10.0K
75/04/08	13 40		2	5	0.15	10K	10K	10K	15	10K	240	10.0K
75/04/16	11 30		2	8	0.10K	10K	10K	10K	28	10K	720	94.0
75/04/30	11 15		1	8	0.12	10K	10K	10K	48	32	940	82.0
75/05/07	11 30		2	9	0.14	10K	10K	10K	54	10K	200	45.0
75/05/14	11 00		2	8	0.11	10	10K	10K	49	10K	390	160.0
75/05/21	10 30		2	5K	0.11	10K	10K	10K	210	10K	230	10.0K
75/06/17	12 00		3	9	0.26	10K	10K	10K	10K	10K	280	12.0

STORET RETRIEVAL DATE 75/09/18

024 MPCA028 TEM-8
47 33 19.0 090 52 24.0
TEMPERANCE R. NEAR SCHROEDER
27 MINNESOTA
LAKE SUPERIOR BASIN
LAKE SUPERIOR BASIN IN MINNESOTA
21MINN 2111204
2 0999 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	00910 CALCIUM CACO3 MG/L	00930 SODIUM NA.DISS MG/L	00935 PTSSIUM K.DISS MG/L	32730 PHENOLS TOTAL UG/L	00955 SILICA DISOLVED MG/L	00051 STREAM FLOW, INST-CFS
73/07/25	11 20		10.0		1.00	5K	7.6	63
73/08/29	15 20		20.0	3.00	1.00K	2K	8.4	60
73/09/13	13 20		15.0	1.00	1.00K	59	7.2	56
73/09/26	12 45		20.0	2.00	1.00K	20	8.4	256
73/10/17	11 05					59	10.0	201
73/11/14	11 30		93.0	4.00	2.00	8	10.0	224
73/12/05	12 20		8.9	3.50	0.57	2K	11.0	136
74/01/30	13 00		15.0	4.20	1.30	4	12.0	25
74/02/23	14 15		19.0	8.90	1.00K	12	11.0	42
74/03/13	11 30		14.0	4.00	0.50	2K	13.0	54
74/04/03	11 30		17.0	4.70	1.20	2K	11.0	44
74/04/10	12 20		14.0	3.60	1.80	13	13.0	53
74/04/24	09 15		10.0K	2.10	1.60	2	7.5	575
74/05/07	11 45		12.0	1.60	3.00	2K	7.6	582
74/05/15	09 45					2	8.5	778
74/06/19	13 00		13.0	1.70	5.70	2	5.9	211
74/07/09	12 00		10.0	1.10	1.00K	2K	7.3	185
74/08/14	12 00		19.0	2.20	1.50	4	7.3	73
74/09/10	14 00		25.0	2.30	1.00K	2K	6.7	75
74/10/03	13 45		18.0	4.00	1.00K	2K	10.0	80
74/11/05	13 45		14.0	2.50	1.00K	2	9.4	69
74/12/10	13 15		16.0	2.20	1.00K	2K	8.4	54
75/01/15	12 30		15.0	3.40	1.10	4	11.0	71
75/02/25	11 35		20.0	3.30	1.00K	2K	11.0	36
75/04/03	13 40		21.0	2.00	0.50K	2K	9.9	49
75/04/16	11 30		20.0	1.80	1.00K	2K		316
75/04/30	11 15		14.0	1.00K	0.50K	2K	7.0	554
75/05/07	11 30		4.9	1.00K	1.00K	2K	6.9	597
75/05/14	11 00		50.0	0.90	0.50K	3	2.0	372
75/05/21	10 30		14.0	1.50	0.80	2K	5.2	324
75/05/17	12 00		14.0	1.60	0.50K	5	7.1	69

STORET RETRIEVAL DATE 75/10/15

024 4PC2028 TEM-8
47 33 19.0 090 52 24.0
TEMPERANCE R. NEAR SCHROEDER
27 MINNESOTA
LAKE SUPERIOR BASIN
LAKE SUPERIOR BASIN IN MINNESOTA
21MINN 2111204
2 0999 FEET DEPTH

DATE FROM TO	TIME	DEPTH OF DAY	FEET	00720 CYANIDE CN-TOT MG/L	00335 COD LOW LEVEL MG/L	00680 T ORG C C MG/L	01002 ARSENIC AS,TOT UG/L	01007 BARIUM BA,TOT UG/L	01034 CHROMIUM CR,TOT UG/L	71900 MERCURY HG,TOTAL UG/L	01147 SELENIUM SE,TOT UG/L	00920 MGNSIUM CACO3 MG/L
73/04/29	15	20				10.5						
73/09/13	13	20				14.8				0.1K		
73/09/26	12	45		0.005K	6.4	11.2	17	20K	2K	0.3	2K	12.0
73/10/17	11	05				23.2				0.4		
74/02/28	14	15		0.005K	50.0K	5.2	10K	20K	3	0.3	2K	10.0K
74/03/13	11	30				8.3						
74/04/10	12	20				8.5						
74/04/24	09	15		0.005K	50.0K		10K	10K	2K	0.9	2K	4.0
74/05/07	11	45				7.0						
74/05/15	09	45				12.0						
74/06/19	13	00				10.5						
74/09/10	14	00		0.005K	34.0		10K	15K	2K	0.2	2K	7.0
75/02/25	11	35		0.005K	25.0	9.0	10K	15K	1	0.1K	2K	3.0
75/04/30	11	15		0.005K	33.0	16.0	10K	15K	1	0.1K	2K	7.0

STORET RETRIEVAL DATE 75/09/18

024 MPCA028 TEM-8
47 33 19.0 090 52 24.0
TEMPERANCE R. NEAR SCHROEDER
27 MINNESOTA
LAKE SUPERIOR BASIN
LAKE SUPERIOR BASIN IN MINNESOTA
21MINN 2111204
2 0999 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	03501 BETA TOTAL PC/L	03502 BETA-T ERROR PC/L	07000 H-3 TOTAL PC/L	07001 H-3,TOTL ERROR PC/L	13501 SR-90 TOTAL PC/L	13502 SR-90 ERROR PC/L	09501 RA-226 TOTAL PC/L	09502 RA-226 ERROR PC/L	39370 DDT WHL SMPL UG/L	00550 OIL-GRSE TOT-SXLT MG/L
73/09/26	12 45		3	2	740.0	260.0	0.7	0.2	5.4K		0.010K	0.5K
74/02/28	14 15		4	3	500.0	200.0	0.5	0.2	12.0K		0.050K	1.4
74/04/24	09 15		4K		330.0	190.0	1.0	0.3	11.0K		0.100K	0.9
74/09/10	14 00		3	3	360.0	170.0	0.6	0.2	2.0K			0.5K
75/02/25	11 30		2	2	380.0	200.0	0.7	0.2	2.0K			
	11 35										0.010K	0.9
75/04/30	11 15		6	3	300.0	180.0	0.5	0.2	2.0K		0.010K	1.5